

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

Reserve
A41.9
R315An

ARS 91-44-3 April 1967



12

PROGRESS REPORT
Cooperative State-Federal

TUBERCULOSIS
ERADICATION

FISCAL YEAR 1966

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY

APR 26 1967

CURRENT SERIAL RECORDS

12-37 X

Animal Health Division • Agricultural Research Service
United States Department of Agriculture
Federal Center Building • Hyattsville, Maryland 20782

PROGRESS REPORT COOPERATIVE STATE-FEDERAL TUBERCULOSIS ERADICATION FISCAL YEAR 1966

MEASUREMENT OF PROGRESS

Since periodic progress is measured by comparing recent and past accomplishments, some comparative factors are included in this report. For instance there was a 3 percent decrease in the number of cattle tested (1966) as compared to the previous year 1965. There was also a drop of 13 1/2 percent in cattle tested during the previous year (1965 compared to 1964). Tuberculous lesions were reported in approximately 29 percent of the reactor cattle slaughtered during 1966. This is the highest annual rate reported in the past 5 years. We might speculate that it is due to more selective testing. However, it is necessary to consider other related factors which follow.

Of the 111 herds in which Mycobacterium bovis was reported during fiscal year 1966, 56 percent were first detected as a result of trace-back testing, and 44 percent were initially found as a result of routine testing procedures. The comparison of the two procedures over the past 5 years is shown in table 1.

Table 1.--Comparison of testing procedures in finding herds infected with M. bovis

YEAR	ROUTINE TESTING ¹		TRACE-BACK TESTING ¹		TOTAL HERDS
	<u>Percent</u>		<u>Percent</u>		
1962.....	78	(173)	22	(50)	223
1963.....	70	(158)	30	(67)	225
1964.....	64	(117)	36	(67)	184
1965.....	62	(87)	38	(54)	141
1966.....	44	(49)	56	(62)	111

¹ Numerals in parentheses after percentage values refer to herds.

The number of infected herds found as a result of tracing has remained fairly constant while there has been a drastic reduction (173 to 49) in the number of herds found as a result of routine testing procedures. During the same period there has been a reduction of 38 percent in volume of area testing (5.1 million to 3.1 million).

In fiscal year 1966 an average of approximately 137,000 unit tests were applied under routine procedures to locate an M. bovis herd. This is in contrast to an average of less than 1,000 unit tests to locate an infected herd after tracing infected and exposed cattle.

The need for continuing emphasis on epidemiological procedures is evident. Although prevalence is low, the disease continues to produce vicious herd outbreaks in various areas (fig. 1). The immediate task is to promptly identify each infected animal and then to identify the contact animals. This requires effective field activity under the direction of well-trained personnel. Skillful diagnosis and case handling is basic to success.

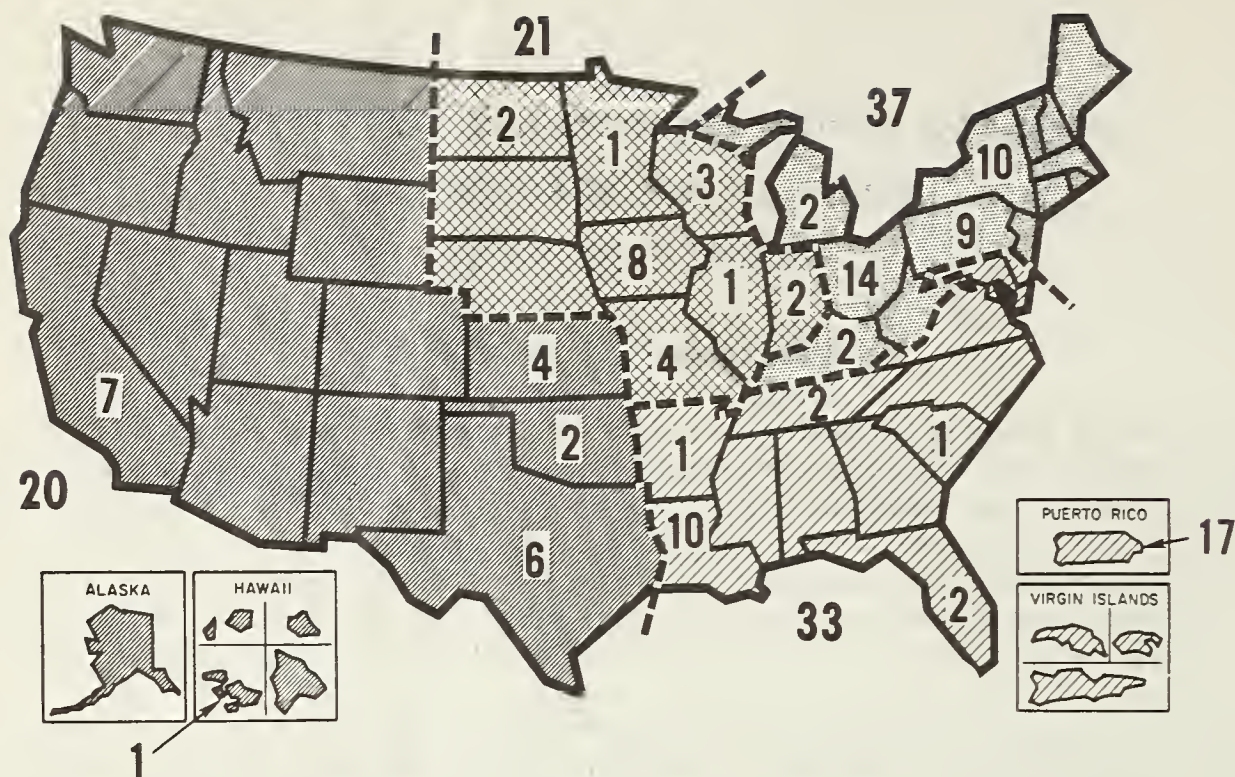


Figure 1.--Location of infected herds in fiscal year 1966: Broken lines show 4 regions under supervision of an assistant director, ANH Division; numerals within States represent the number of infected herds in the State; and numerals outside of U.S. boundaries show the total infected herds in each region.

Epidemiologist training. When epidemiologist training was first given to a small group of selected individuals, tuberculosis eradication program officials were concerned with the number of problem herds. These herds were maintaining an infected status over long periods of time in spite of routine use of program techniques and procedures.

During fiscal year 1966, the long-term problem herd was not so much in evidence as was the overwhelming disease in newly located infected herds. There is an increasing need for highly trained epidemiologists to locate and define foci of infection.

To help meet this need, we had 11 men enrolled in courses of advanced study. Two of these men finished work leading to a master's degree. Five of the remaining nine were pursuing graduate programs with master's degree candidacy.

Epidemiologists contribute in many ways to accelerate the eradication of tuberculosis and other diseases. Among these contributions are:

1. Eliminate hidden infection in problem herds through use of special tests and procedures.
2. Identify associated pools of infection through improved investigative procedures and mass population studies with and without the use of rapid data processing equipment.
3. Function as a small corps of highly skilled personnel capable of training others in improved methods to elevate the general competency of the field force.

The slaughter cattle screening method is an efficient approach to the task of locating infection pools in a predominantly free livestock population. However, even if these methods are operating at high levels of success in locating infection pools, we will always be working behind

the disease unless we have highly skilled and dedicated personnel to determine the total population at risk and to identify the limits of infection and exposure. This is the function of the epidemiologist, and the purpose of his training is to equip him to carry out this function. We have been most pleased with the quality of personnel recommended for this training. We have made a good beginning. At least four more men are needed to enter training during the next year.

Constructive action is urgently needed to improve the correlation of natural and man-made markings of hides with carcasses until inspection is completed, to enable inspectors to identify animals as they pass through modern slaughtering processes. Increased mechanization of cattle slaughtering plants is challenging the effort to obtain descriptive identification of tuberculous cattle reported by meat inspectors. Approximately 54 percent of the cattle subjected to Federal inspection in fiscal year 1966 were slaughtered in plants using one or more modern mechanized methods, which usually include removal of the hide from the slaughter floor before inspection is completed.

The value of descriptive animal identification was demonstrated by a case study reported in fiscal year 1966 in which a meat inspector reported two tuberculous cattle on slaughter. The inspector was able to report eartags, age, sex, weight, and breed for each animal that had moved through two markets in an adjoining State. Outstanding records based on the descriptive identification of subject animals were found at each of the markets. This made it possible to identify the previous contact herd in which advanced herd infection had been found. This herd had been assembled from animals purchased at the nearby market, which had records that finally led back through a dealer to a herd in another State. This second herd was sold to an owner in a third State where it was subjected to test. The test revealed reactors in 75 percent of the animals in the herd. Necropsy revealed advanced tuberculosis in so many of the reactors that officials decided to eliminate the entire herd. The owner of this herd stated that he would have consigned some of the infected cattle to a sale had he not been aware of the possibility of disease. It is impossible to estimate the losses that might have occurred to the livestock owners and consumers if the infection had not been detected and this sale prevented.

During fiscal year 1966, 424 lesion cases, found on regular kill meat inspection (ADE form 6-35), were investigated and completely reported. These included 434 cattle with lesions in the head, in the thoracic cavity, or in both. As a result of case studies, indications of *M. bovis* infection were found in 33 herds.

Eighty-three cases reported were not identified with source herds. Of these 83 cases, the following items were of interest:

Sixty-seven head, or 81 percent, were beef-type cattle; 14 head, or 17 percent, were dairy-type cattle; and 2 head, or 2 percent, were an unknown type.

Other items of interest noted in these 83 cases were:

In thirty cases, investigations terminated at feed lots; in 4 cases, no appreciable animal identification was available at the slaughtering plant; in 11 cases, eartags were reported, but no record of eartag application was found; and in 4 cases, backtags were reported, but led back only to dealers or other temporary owners.

Backtags were utilized in locating three herds with infection indicative of *M. bovis*. In one case, the backtag alone was the determining factor. In one case, the backtag record in combination with the eartag record led from slaughter in Wisconsin to an infected herd in Kentucky. In another case, the animal was identified by the backtag, eartag, and sales tag. The herd of origin was readily identified, through the backtag record in Louisiana, with a herd from which 67 reactors were removed.

In addition to the above, 262 cattle were reported with mesenteric lesions only. Laboratory examinations and investigations have shown that approximately 41 percent of the animals with lesions only in the mesenteric glands were associated with M. avium infection.

The change in Federal regulations in 1964 that provided indemnity payments for exposed nonreacting animals in selected herds has stimulated the depopulation of herds with heavy or repeated infection. Prior infection of herds examined in fiscal years 1965 and 1966 are compared in figure 2. The decrease from 44 percent to 25 percent may be attributed in part to depopulation of herds with long standing infection.

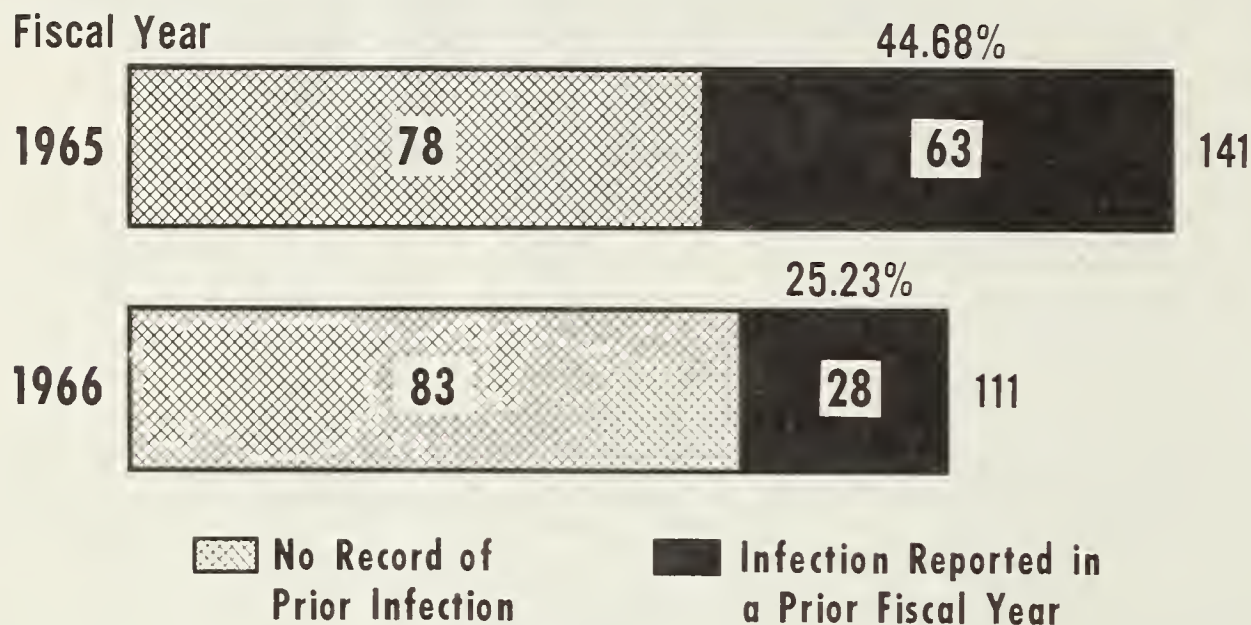


Figure 2.--Herds reported with tuberculosis infection for fiscal years 1965 and 1966.

Records of the 28 herds with M. bovis infection in 1966 are summarized in figure 3 to show the years in which infection had been previously reported. The current status of the herds involved is also summarized. In one case, infection was reported in 9 different years before the entire herd was sent to slaughter. A review of records clearly shows that it is less expensive to depopulate many of these herds than to attempt elimination of the disease by repeated testing.

Free Areas. A total of 606 counties in 23 States, Puerto Rico, and the Virgin Islands have been designated as free areas (bovine-type tuberculosis in cattle) (fig. 4). Lesion cases, positive or highly suspicious of bovine tuberculosis, have been found in 28 of these counties in 7 States and Puerto Rico.

Figure 5 shows an increase in the number of red-flag herds reported during 1966. Because this is the first year that an upswing has occurred in number of herds reported in this category, close attention is being given to the causative factors. Indications are that some of the infected herds were located as the result of a more active program.

During the past year, outbreaks of bovine tuberculosis involving humans and animals other than cattle are worthy of note. The following cases have been reported:

1. Tuberculosis (M. bovis) was found in a herd of 15 elk at a game preserve in Pennsylvania. The entire herd was slaughtered.

Number Infected Herds	FISCAL YEAR OF RECURRENT INFECTION															CURRENT HERD STATUS			
	1966	'65	'64	'63	'62	'61	'60	'59	'58	'57	'56	'55	'54	'53	'52	'51	IN QUARAN-TIME	QUARAN-TIME RELEASED	ENTIRE HERD SLAUGHTERED
8	●	●															3	1	4
1	●	●	●	●	●												1		
1	●	●			●														1
1	●	●	●		●			●										1	
1	●	●							●								1		
1	●	●	●	●	●			●						●	●	●			1
1	●		●	●		●	●										1		
3	●			●													2	1	
1	●				●		●	●										1	
1	●				●			●										1	
3	●					●											2	1	
2	●						●										2		
2	●							●									1	1	
1	●								●	●							1		
1	●												●				1		
28																15	7	6	

Figure 3.--Recurrent M. bovis infection reported in 28 herds, fiscal year 1966.

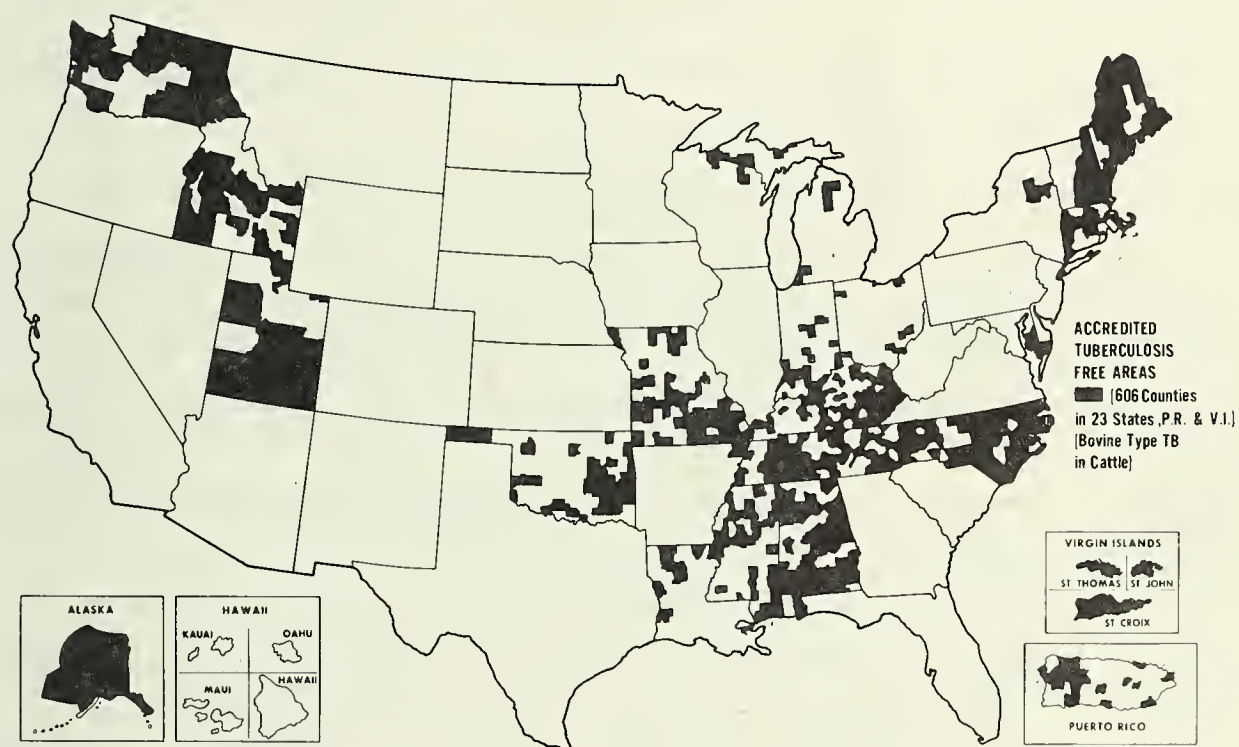


Figure 4.--Accredited tuberculosis-free areas in the Cooperative State-Federal tuberculosis eradication program, July 1, 1966.

239 herds

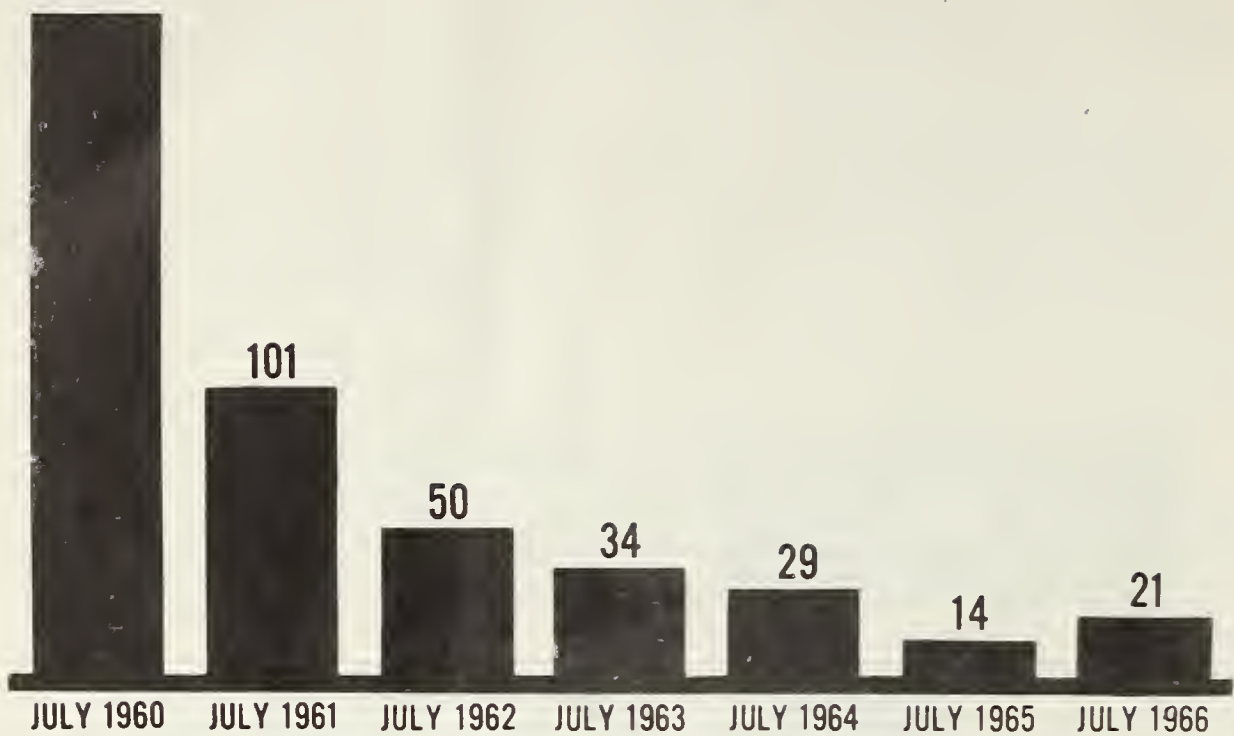


Figure 5.--Red-flag herd totals under the tuberculosis eradication program.

2. Wild swine infected with M. bovis were found on a large California ranch where tuberculosis in cattle has been a problem. The swine are being eliminated by experienced personnel from the Bureau of Sport Fisheries and Wildlife, Department of the Interior.
3. Tuberculosis was found in an 18-year-old goat that had been in close contact with a tuberculous dairy herd in Pennsylvania.
4. A fatal human case in Connecticut due to M. bovis was reported in May 1966.
5. An active human case of bovine-type tuberculosis was also reported in New York State. It involved a dairyman who had lost his entire herd of cattle in 1947 because of tuberculosis. Fourteen reactors were removed from the replacement herd.

The following other species of animals and cattle are being studied for tuberculosis and Johne's Disease:

1. Horses, to determine the prevalence of tuberculin sensitivity and the nature of the sensitizing organism.
2. Dogs and cats, to determine the optimal diagnostic procedure.
3. Swine, to determine the best approach to tuberculosis eradication and the nature of the infecting organism.
4. Studies of Johne's Disease are centered on evaluating vaccination as a control measure and on the effect of Johne's vaccination on the tuberculin test.

There is concern about the avian type of tuberculosis as it applies to disease in domestic animals and man. M. avium has been reported in many species of animals. A high percentage of the lesions of tuberculosis reported in swine have been considered to be associated with M. avium.

Of the 165 tuberculous lesions taken from regular kill cattle and from which mycobacteria have been isolated during fiscal year 1966 at the National Animal Disease Laboratory, 84, or 50 percent, were classed M. avium.

The National Tuberculosis Association and affiliated local organizations gave a generous amount of their time by participating in work conferences in various geographical areas. The exchange of information on experiences in tuberculosis eradication in humans and domestic animals benefitted the participants.

Veterinarians engaged in disease eradication among animals at zoological gardens also participated in the work conferences on eradication procedures. Thus, in setting a course for final eradication of tuberculosis from domestic animals, we are also trying to eradicate it from other related species to eliminate reservoirs of infection.

The Tuberculosis Eradication Staff at Hyattsville, Md., participated in two training conferences for livestock inspectors during fiscal year 1966. Program procedures and results were outlined, specific case studies were discussed, and questions and answers were freely exchanged. Trainees had an apparent desire for the available information.

In working with problem herds, the epidemiologist includes the following factors in his consideration of the case.

1. History of the herd.
2. History of individual animals in the herd.
3. Husbandry practices on the premises.
4. Laboratory findings on specimens taken from animals in contact with the herd.

Maximum use of his training and experience will be beneficial to the livestock owners and to the consumers.

Market cattle identification and traceback are an important part of the Tuberculosis Eradication program. The following tables show a need for individually identifying a greater number of slaughter animals until inspection is completed at accredited slaughter plants. Calculations on the probabilities of finding infected herds under various conditions are based on:

- (1) Rate of herd turnover for slaughter.

The probability figures in tables 2 and 4 are based on a 50-percent herd turnover during a 3-year period. This more or less coincides with the turnover in beef herds.

Tables 3 and 5 are based on a 100-percent herd turnover during a 3-year period. This corresponds more closely to management practices in dairy herds.

- (2) Size of herd.

- (3) Potential herd infection rates - 10, 5, 4, or 2 percent, based on animals with lesions.

Tables 2 and 3 show the probability of finding infected herds under three rates of slaughter animal identification--40, 60, and 80 percent.

TABLE 2.--Probability of finding *M. Bovis* in infected herds during a 3-year period under the animal identification program, (based on a 50% herd turnover during the 3-year period)

Cattle in herd (number)	Herd infection rate	Animals moved to slaughter during a 3-year period	Lesion animals moved to slaughter during a 3-year period	Probability of finding tuberculosis when animal identification rate through slaughter is--		
				40 percent	60 percent	80 percent
	<u>Percent</u>	<u>Number</u>	<u>Number</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
10-----	10	5	1/2	20	30	40
20-----	10	10	1	40	60	80
	5	10	1/2	20	30	40
50-----	10	25	2 1/2	72	89	98
	4	25	1	40	60	80
	2	25	1/2	20	30	40
100-----	10	50	5	92	98	99
	4	50	2	64	84	96
	2	50	1	40	60	80

TABLE 3.--Probability of finding *M. Bovis* in infected herds during a 3-year period under the animal identification program, (based on 100% herd turnover during the 3-year period)

Cattle in herd (number)	Herd infection rate	Animals moved to slaughter during a 3-year period	Lesion animals moved to slaughter during a year period	Probability of finding tuberculosis when animal identification rate through slaughter is--		
				40 percent	60 percent	80 percent
	<u>Percent</u>	<u>Number</u>				
10-----	10	10	1	40	60	80
20-----	10	20	2	64	84	96
	5	20	1	39	60	80
50-----	10	50	5	92	98	99
	4	50	2	64	84	96
	2	50	1	40	60	80
100-----	10	100	10	99.6	100	100
	4	100	4	88	98	99.9
	2	100	2	64	84	96

Table 2 is based on a 50-percent herd turnover to slaughter during a 3-year period. It shows that in a 10-cow herd with a 10-percent herd infection and with a 40-percent animal identification through slaughter, there is a 20-percent probability of finding tuberculosis. In a 20-cow herd having a 10-percent infection and a 40-percent animal identification through slaughter, there is a 40-percent probability of finding tuberculosis.

Table 3 is based on 100-percent herd turnover to slaughter during a 3-year period. This increases the probability index. In tables 2 and 3 it is apparent that with a stated rate of herd infection, the probability of finding the disease on slaughter is greater in large herds than it is in small herds. In addition, the probability of finding the disease is greater in herds with high infection rates than in herds with low infection rates.

It is also apparent that infected animals are more readily revealed in herds having the higher rates of animal movements to slaughter.

TABLE 4.--Animal identification rate required to find *M. Bovis* infected herds during a 3-year period under the animal identification program, (based on a 50% herd turnover during the 3-year period)

Cattle in herd (number)	Herd infection rate	Animals moved to slaughter during a 3-year period	Lesion animals moved to slaughter during a 3-year period	Animal identification rate required on slaughter when the desired probability of finding infection is--			
				50 percent	75 percent	90 percent	95 percent
	<u>Percent</u>	<u>Number</u>	<u>Number</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
10-----	10	5	1/2	100	*	*	*
20-----	10	10	1	**	80	90	100
	5	10	1/2	100	*	*	*
50-----	10	25	2 1/2	**	44	60	68
	4	25	1	**	76	92	96
	2	25	1/2	100	*	*	*
100-----	10	50	5	**	24	36	44
	4	50	2	**	50	68	78
	2	50	1	**	76	90	96

*50% probability of detecting disease is best that can be achieved with these infection and turnover rates.

**Not computed.

TABLE 5.--Animal identification rate required to find *M. Bovis* infected herds during a 3-year period under the animal identification, program (based on 100% herd turnover during the 3-year period)

Cattle in herd (number)	Herd infection rate	Animals moved to slaughter during a 3-year period	Lesion animals moved to slaughter during a 3-year period	Animal identification rate required on slaughter when the desired probability of finding infection is--		
				75 percent	90 percent	95 percent
	<u>Percent</u>	<u>Number</u>	<u>Number</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
10-----	10	10	1	80	90	100
20-----	10	20	2	50	70	80
	5	20	1	75	90	95
50-----	10	50	5	24	36	44
	4	50	2	50	68	78
	2	50	1	76	90	96
100-----	10	100	10	12	20	25
	4	100	4	29	43	52
	2	100	2	50	68	77

Tables 4 and 5 show the animal identification rate that is necessary to find a specific percentage of the infected herds. The probabilities specified in table 4 are based on a 50-percent herd turnover during a 3-year period. In table 5, the probabilities specified are based on a 100-percent herd turnover during a 3-year period.

Herd infection rate and herd size are again basic factors in determining the probability of finding infected herds. For instance, table 4 shows that in a 10-cow herd with a 10-percent infection, there is a 50-percent chance of finding infection on slaughter if 100-percent of the cattle are identified. In a 50-cow herd with a 10-percent infection, there is a 75-percent chance of finding the infection if 44 percent of the cattle are identified on slaughter.

The probabilities shown in tables 4 and 5 indicate that a higher rate of identification coverage is needed than now exists, to have an effective eradication program based on post-mortem experience and traceback.

The following factors are basic in the eradication of tuberculosis:

- (1) Use of effective methods to maintain individual identification of cattle on the farm and in commercial channels, including identity until inspection is completed on slaughter.
- (2) Obtaining reports of all animals (cattle) that are found to be tuberculous, as revealed by inspection at slaughtering plants.
- (3) Applying specialized epidemiology in eradication procedures.

LOGARITHMIC CHART

Although the statistical projection for the numbers of generalized lesion cases reported by Federal meat inspectors indicates that tuberculosis eradication will occur in 1995 or 1996, there are disquieting indications apparent in figure 6. You will note that the slope trend is upward since 1958. If this trend is an indication of decreased progress, then eradication may not occur by the projected time.

The recent change in apparent rate of progress together with the increasing ratio of advanced herd infection when it is revealed, points up the need for prompt, thorough epidemiological investigations to minimize disease spread from herds with longer term infection.

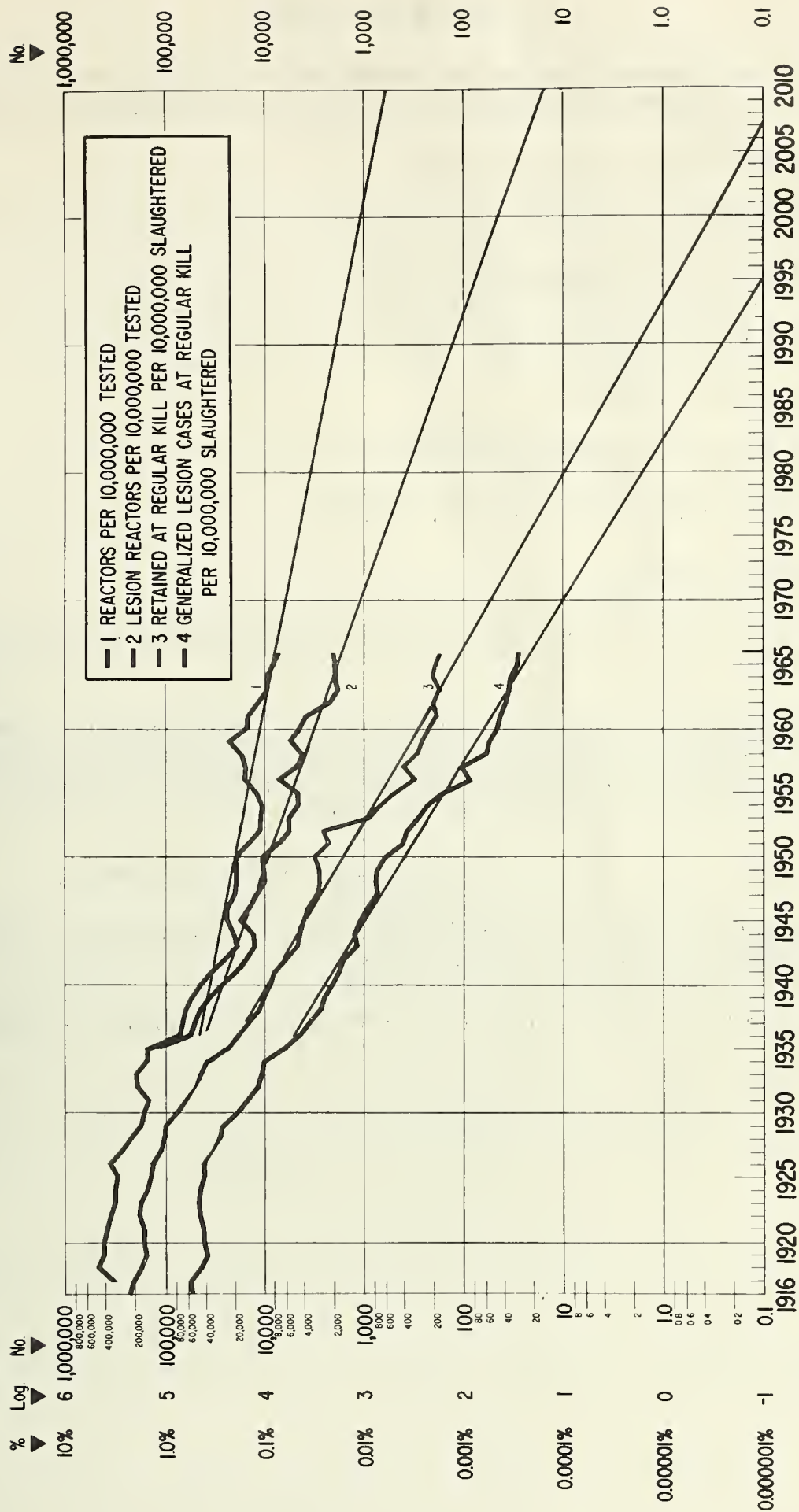


Figure 6.--Progress in tuberculosis eradication since 1916.

SUMMARY BY STATES

Tuberculosis eradication highlights by States are summarized in the pages that follow. Abbreviated terms used extensively throughout the summary have the following meanings:

ANH - Animal Health Division, ARS, USDA

CFR - Code of Federal Regulations

C&MS - Consumer and Marketing Service, USDA

MCI - Market Cattle Identification

MCT - Market Cattle Testing

MID - Meat Inspection Division, C&MS, USDA

NADL - National Animal Disease Laboratory, USDA

NGL - No gross lesion(s).

Red-flag herd is one in which reactors with lesions of tuberculosis have been found on repeated tests.

Accredited establishment is one at which supervised meat inspection is maintained at all hours when slaughter is in progress, post mortem procedures meet recognized standards for the disclosure of lesions of tuberculosis, and the procedures are adequate for maintaining the identity of individual cattle until inspection is completed.

ADE Form 6-35, " Report of Nonreactors Showing Tuberculosis Lesions."

"We" in the State summaries refers to State and Federal veterinarians who report the status of disease eradication in their respective States.

Progress reports of various tuberculosis programs are summarized in tables 6 to 25 in the appendix.

ALABAMA

M. bovis has not been a problem in Alabama for a number of years. The State does not have the authority to pay indemnity on nonreactors in heavily infected herds because there has not been a need for it.

Tuberculosis in poultry has not been a problem in Alabama. Very few reports have been received of TB-like lesions in swine. In most instances the herd of origin has been determined and it was tested with avian and mammalian tuberculin, or the State or Federal Veterinarian recommended the procedure to use in eliminating tuberculosis, if present, from the premises. Procedures included sanitary management, consigning herd to slaughter, cleaning and disinfecting, separating livestock by species, and restocking on clean premises with swine from tuberculosis-free herds.

We have not received any reports of tuberculosis in wildlife.

Very good public relations are maintained with public health agencies and with the two schools of veterinary medicine in Alabama.

All slaughtering establishments in Alabama that meet the standards have been recommended as accredited establishments. We are now reviewing their procedures to determine if they still qualify. The list may need revision when this survey is completed.

Identification of cattle moving directly to slaughter from a farm or through a single market can usually be traced effectively. The efficiency of identification varies greatly when the livestock moves through more than one market or through dealers. Dealer records are far from adequate. We are trying to get dealers and the livestock industry to improve their records.

ALASKA

During fiscal year 1966, 17 of the 19 districts in Alaska qualified for TB-free status. District 11, The Aleutian Chain, and District 12, Kodiak, and surrounding islands, have not yet achieved that status.

Since 1961 only two TB reactors have been disclosed on tests. Both animals were imports from a northern State. The premise of the infected herd was depopulated with indemnity paid only on the reactors. Disposal was accomplished through slaughter after two negative herd tests. This premise has not been restocked.

Tuberculosis does not appear to be a problem in domestic animals or wildlife, although human TB is a problem among Eskimos and Indians primarily due to winter housing.

Caribou and buffalo killed by hunters were routinely checked for TB while inspectors were on field trips. Veterinary inspection of the reindeer slaughter on Nunivak Island has been furnished by the State veterinarian for several years. No evidence of TB has been shown.

Because of slight incidence in the past of TB in livestock, we have had no occasion to work with Public Health Service in TB eradication.

Three operating slaughter plants are in the State. One new plant will have inspection service furnished by the Post Veterinarian at Fort Greely, and will be accredited. One plant at Palmer has inspection service only when the customer requests it or when meat is to be sold in Anchorage. The outer plant slaughters only swine and has inspection service.

Since slaughter volume is so small and identification is not a problem, a backtagging identification system is not used.

During fiscal year 1967, visits will be made to the two commercial poultry plants and some type of TB screening set up when the birds are slaughtered. Both plants are egg producers and slaughter 2-year-old birds as the market can absorb them. Replacement birds are shipped in from Washington State.

Our main problems in TB eradication are related to the widely scattered livestock herds and the great distances involved in getting to them. Other considerations are weather conditions and the availability of the animals when the weather is favorable.

ARIZONA

Six of the fourteen counties in Arizona were reaccredited in fiscal year 1966. Although no reactors were found when reaccreditation tests were conducted in five of these counties, no county was designated tuberculosis-free because of the difficulty expected in controlling the movement of range cattle between counties and the large volume of testing that would be required to maintain accredited-free status. Some consideration has been given to declaring several counties tuberculosis-free simultaneously, which with further development in the Market Cattle Testing program would overcome this problem to some extent.

Reactors to the tuberculin test were disclosed in nine herds during fiscal year 1966. Three herds in which reactors were found consisted of cattle imported from other States and retested 60 days after entry to comply with Arizona regulations.

No new M. bovis herds were disclosed during fiscal year 1966. One herd from which M. bovis had been isolated previously was retested with negative results and released from quarantine during this period. Surveillance will be maintained on this herd.

Depopulation of M. bovis infected herds with indemnity for nonreactors was not required in fiscal year 1966. No specific State authority exists to pay indemnity for nonreactors in such herds, but it is believed this could be quickly arranged if warranted.

Because of the NGL problem, special handling of suspect animals was carried in three dairy herds that showed numerous responses to the tuberculin test but no lesions on post mortem. The suspect classification is used in Arizona with special approval only. No ADE forms 6-35 requiring cattle herd tests were received during the fiscal year.

One form 6-35 was received on hogs slaughtered from a previously infected swine herd, which was tested negative and will be retested prior to release from quarantine.

A deer herd received from another State and from which M. bovis had been isolated in 1964 was retested negative for the third time in fiscal year 1966 and was released from quarantine. Surveillance of this herd will be continued through post mortem examination of all deer that die or are slaughtered.

State and Federal veterinarians conducted post mortem examinations on 120 buffalo culled during the annual buffalo hunt from the House Rock State buffalo herd. No lesions indicative of tuberculosis were found. The practice of performing post mortem examinations on all buffalo removed from Arizona herds each year will be continued.

Two tuberculin reactors were found among 351 goats tested, but no gross lesions were disclosed at slaughter. Movement from these herds has been restricted pending a negative retest.

State and county health departments are routinely notified when tuberculin reactors are disclosed in dairy herds, and cooperative epidemiological investigation of tuberculosis herds are made as indicated. At the request of the State Health Department, 18 cats and 10 dogs, removed from a questionable premise, were tested negative for tuberculosis by a practicing veterinarian.

Basic standards set for accredited slaughtering establishments are being complied with and are being improved. The inauguration of the MCT program in Arizona and the use of two- and three-part tags by all establishments have significantly improved positive identification of parts with the carcass throughout the slaughtering process.

ARKANSAS

We worked with one known M. bovis infected herd during the year. This herd had not been infected long enough to be classified as a red-flag herd. However, efforts were made toward the end of the fiscal year to depopulate the herd and pay the owner indemnity for nonreactors. The State law concerning the payment of indemnities on this type of action was not completely clear, and for this reason the director of the Arkansas Livestock and Poultry Commission requested an opinion from the Attorney General. He rendered an opinion that the State did have authority to pay indemnity for both infected and exposed animals, but there was not enough time to get the herd tagged, branded, appraised, and slaughtered before the end of the fiscal year.

The most significant accomplishment during the year was the continuing improvement in maintaining the identification of cattle from farms of origin to slaughter in accredited establishments. During the year we were able to trace 6.7 percent of the adult cattle population to slaughter in this manner. As a result, the entire State was recommended for reaccreditation. This will save many thousands of dollars and veterinary man-hours because we have several thousand grade C dairies that would have been due for tests during fiscal year 1967.

CALIFORNIA

In fiscal year 1966 M. bovis was confirmed in three herds with no previous history of tuberculosis infection. Two of these herds were involved in one outbreak. In this outbreak, a neighboring dairy was exposed to a herd with high incidence of infection. Only one reactor with lesions was found in the exposed herd. All the nonreactors in the badly infected herd were sent to slaughter by the owner.

California has two red-flag herds. One of these has passed four consecutive negative tests. The other herd was involved when M. bovis was confirmed in wild swine roaming the cattle pastures.

California agricultural code provides the authority to depopulate herds in which it has been determined that tuberculosis cannot be eradicated or controlled by usual recognized methods. This authority has been used in only one herd that was depopulated in 1964.

In recent years, there has been no record of tuberculosis in poultry having been reported in California.

Swine, on a large commercial ranch that has no contact with cattle, were found to be infected with M. bovis. The herd was under a hold order and only movements to slaughter were permitted.

A commercial beef herd of 4,000 head located in California's coastal mountains was found to be infected with tuberculosis in 1961. The tuberculin test reactor rate in this herd steadily declined, and in the early months of 1964 two negative tests were obtained on all cattle on the ranch. On further retests, a relatively high incidence of infection was found in one group of cattle on a remote part of the ranch. The unexpected setback in the progress of the eradication efforts led to epidemiological analysis and to suspecting that feral swine on the 76,000-acre ranch might be infected and are serving as a source of reinfection. Arrangements were made to collect swine for post mortem examination. In July 1965, a wild hog was shot and was found to have lesions. Bacterial isolations were typed as M. bovis. Subsequently, lesions of tuberculosis have been found in several other swine. Surveys have not uncovered infected swine outside of one small area. The California and United States Departments of Agriculture have entered into an agreement with the United States Fish and Wildlife Service to depopulate the infected feral swine.

The State Public Health Service participates in the Statewide Swine Disease Committee meetings in an advisory capacity. In addition, a number of Public Health Department personnel in some counties participate in the tuberculosis testing of cattle.

At the present time, all slaughtering establishments in California are on the accredited list.

COLORADO

Colorado has no herds known to be infected with M. bovis. However, tuberculin-sensitive herds infected with mycobacteria other than M. bovis continue to be disclosed. The rate of infection was somewhat higher than in other years probably because of a cyclic increase in milk ordinance testing, but infection was also found in beef herds.

Perhaps the most significant accomplishment for Colorado has been in methods of managing tuberculin-sensitive herds. The "suspect" classification is now used, and herd management is much in accordance with the Uniform Methods and Rules for Tuberculosis Eradication and ANH memorandum 506.22.

Poultry and swine are routinely tested on reactor herd premises. Post mortem examination of reacting poultry has revealed no tuberculosis in either class of livestock during fiscal year 1966.

Close contact is maintained with the Colorado State and the Denver County Health Departments.

The Colorado Tuberculosis Project has provided opportunities to work more closely with institutions concerned with tuberculosis control and research (University of Colorado, Department of Microbiology, and Department of Immunology; the Webb-Waring Institute for Research in Chest Diseases; and the National Jewish Hospital.

Accredited Slaughtering Plants

Colorado has 15 accredited establishments with suitable inspection facilities. One other plant is expected to receive accredited status in the near future. Of interest is a method worked out at this plant whereby hides are recoverable without slowing down the kill, making it practicable for MID to utilize hide identification for other diseases in which they are interested.

Colorado is preparing legislation to place all nonfederally inspected plants in the State under State inspection, which is planned to be comparable with the Federal inspection of plants. This will allow more accredited establishments.

Accredited establishments are visited semiannually by ANH field veterinarians and the provisions of ANH Memorandum 552.19 are reviewed. A more concentrated effort is being made to improve communications between MID and ANH to obtain closer cooperation in the submittal of ADE form 6-35.

Animal Identification

Colorado brand laws provide an almost foolproof system of animal identification. No ADE form 6-35 traceback failures were encountered where the brand was given as part of the identification. This includes branded animals killed in Colorado but originating in other States. A study is currently in progress to better utilize this system for area accreditation and other phases of tuberculosis eradication activities.

Special Tuberculosis Project No. 16

Suitable progress is being made in the determination of the cause of nonspecific tuberculin sensitivity in Colorado cattle. Experimental data support a hypothesis that the sensitivity may have a nutritional basis. Three project herds are now on an altered mineral intake and should provide evidence for or against this hypothesis within 3 months. Recommendation on mineral alterations are also being made for "nonproject" reactor herds throughout Eastern Colorado. This should provide additional, though less precise, data concerning this hypothesis.

An independent, though related, research project directed towards the isolation and characterization of mycobacteria from bovine intestinal tissue is under way under the direction of the University of Colorado.

CONNECTICUT

No lesions of tuberculosis were disclosed in Connecticut cattle during the fiscal year 1966; 105,634 cattle in 3,553 herds were tested, with 26 being classified as reactors during the year.

Our one red-flag herd has passed three successive negative tests, has been released from quarantine, and is being recommended for removal from the red-flag list.

The State has authority to pay for nonreacting animals when the premises are depopulated. No premises were depopulated during the 1966 fiscal year.

No diagnostic or eradication work was carried out during the 1966 fiscal year in poultry, swine or wildlife.

All infected herds are routinely reported to the State Health Department.

Standards of accredited slaughtering plants in Connecticut exceed the minimum standards listed in Memorandum 552.19 of September 17, 1964.

We have experienced little difficulty in maintaining identification of cattle from farm through slaughter.

Four counties have been submitted for Accredited Tuberculosis Free classification during the fiscal year 1966.

DELAWARE

Delaware has continued to enjoy a low incidence of tuberculosis in cattle during the past fiscal year. Three NGL reactors in two herds were revealed on routine area testing.

The low incidence of TB makes it difficult to maintain an awareness of the potential danger tuberculosis still is to the livestock industry of the State. The Veterinarian in Charge emphasized this in a speech before the Dairy Day group during Farm and Home Week at the University of Delaware, recalling the experience of other States that had encountered a rise in tuberculosis after relaxation of routine screening procedures.

A very good working relationship exists between the State Health Department, State Board of Agriculture, and the USDA Animal Health Division. These agencies exchange information when they have evidence of possible tuberculosis exposure between cattle and humans.

The State still lacks the necessary dealer control laws to meet the requirements set forth in the Uniform Methods and Rules for Tuberculosis Eradication to qualify as being free of M. bovis infection in the domestic bovine. The mechanics of identifying animals from farm through slaughter is not a problem except with a few dealers who maintain inadequate records.

During the fiscal year, the livestock market has provided the necessary facilities for testing and holding animals returning to the farm. This is a valuable adjunct to the present program of giving tuberculin tests to dairy herds every year and to beef herds every 3 years.

FLORIDA

Only two herds in the State are under tuberculosis quarantine. Both are infected with M. bovis and are in the red-flag category. One herd was located as a result of an ADE form 6-35 on regular kill. The other herd was found as a result of a milk ordinance test conducted by an accredited veterinarian. Both herds are being tuberculin tested cervically at approximately 30-day intervals.

No tuberculosis infected herds have been depopulated with indemnity of nonreactors. The State Division of Animal Industry has no authority to pay for nonreactors in these herds. The North Florida Milk Producers Association arranged to introduce a bill at a special session of the legislature for depopulating one of our red-flag herds. However, the matter was closed when it was discovered that the ANH Division did not have sufficient funds to depopulate this herd.

A close liaison is maintained between State-Federal disease eradication agencies and the Public Health Service, particularly through the director of the Division of Veterinary Health.

We have 52 (44 State, 8 Federal) accredited slaughtering establishments in Florida. In the past we have received excellent cooperation from these establishments in reporting animals slaughtered. From July 1, 1965, through May 31, 1966, (11 months) we received slaughter reports traceable to the herd and county of origin on 158,644 animals.

We experienced no difficulty maintaining identity of cattle from farm to slaughter. Even though we have no dealer laws in this State, we experienced little difficulty in maintaining identity of animals handled by dealers and livestock markets.

GEORGIA

In fiscal year 1966, 2,507 lots consisting of 109,547 cattle were tested and 55,132 backtagged cattle were slaughtered at accredited establishments in Georgia without evidence of tuberculosis (*M. bovis*). At present, 118 slaughtering establishments are under State or Federal inspection and qualify as "accredited" under the Tuberculosis Uniform Methods and Rules. Identification of animals routed through these establishments is very effective, owing to the close liaison of cooperating disease eradication and meat inspection agencies. This close cooperation will definitely benefit the proposed plan of Georgia to establish and maintain an accredited-free status.

During the year only one incidence of tuberculosis-like lesions was disclosed in swine on regular kill. Specimens were forwarded to NADL, and according to its findings, the lesions appear to be due to atypical mycobacteria or, possibly, to the avian organism. These swine were raised and parlor-fed separate and apart from all other livestock and poultry. No tuberculosis has been reported in poultry, although Georgia is the second largest poultry producing State in the Nation.

Liquidation was completed on the last red-flag herd in August 1965, with Federal and State indemnity paid on 255 nonreacting exposed animals.

Close working relations and exchange of data continue with local and State Health Departments and the Communicable Disease Center.

HAWAII

The large red-flag herd continues to have lesions in reactors. On the last test, only young animals reacted. More epidemiology is planned to determine if there is an outside source of infection or if there are undisclosed sources within the herd. Plans are to check wild goats and pigs as well as neighboring herds of domestic animals.

Depopulation is not considered for this herd. Percentage of reactors has been low, although infection has persisted for years. Although State authorities apparently have necessary authority, payment of indemnity for nonreactors has not been necessary in the past when depopulation of herds was advisable.

Tuberculosis in swine or wildlife was not evident in the past year. This is no assurance that wildlife is not infected, since past evidence indicates that infected cattle were in contact with wildlife for many years.

One gamecock post mortem was suspiciously tuberculous. Samples submitted to the State laboratory and NADL were not confirmatory as the samples had undergone serious decomposition in transmittal. Tests of 68 birds in flocks of both owner and previous owner were negative.

Although good relations are maintained with Public Health Agencies, no human-to-animal nor animal-to-human cases were disclosed.

All State slaughter establishments are accredited by the standards given in USDA Animal Health Division Memorandum No. 552.19. No difficulty has been found in maintaining identification through slaughter. State regulations require keeping records of eartags, brands, sex, and breed or coloring. No markets or licensed dealers are in the State. Animals bought for slaughter by unlicensed dealers are traced to original owner, when necessary, through records of these dealers or information in slaughterhouse records.

Besides the "wild" cattle and the one red-flag herd, the testing of previously infected herds on Molokai is the biggest problem facing tuberculosis eradication in Hawaii. This island is part of Maui County and is delaying county accreditation. Molokai has no local veterinary service. The herds on this island range in rough terrain and frequently are not available when veterinarians arrive to conduct a scheduled test.

IDAHO

Twenty-nine of Idaho's 44 counties have tuberculosis-free status. The State has no red-flag herds. No M. bovis infected herds were found during fiscal year 1966.

We are placing more emphasis on testing and tracing of swine herds reported infected with avian tuberculosis. We are working with the stockyard and brand officials in a continuous effort to increase identification and tracing of animals.

Two veterinarians completed training in post mortem examination of tuberculosis reactors during the year.

Accredited establishments are visited periodically by area and district veterinarians to check procedures for maintaining identity of cattle during the slaughter and inspection process.

ILLINOIS

Illinois completed 56 ANH forms 6-35 during this fiscal year. This was approximately 38 percent more than the number completed last fiscal year. M. bovis was isolated in six of these cases. It is believed that the actual herd of origin in Illinois was determined in 14 of the 56 ANH forms 6-35 completed.

Additional training consisted of two veterinarians having completed post mortem training, where lesions were observed on regular kill at the slaughter house. Three other veterinarians attended a 3-day tuberculosis epidemiology seminar in Chicago.

Incidence of tuberculosis in other species, particularly in swine and poultry, continue to be pursued in this State.

There are no red-flag herds in Illinois.

INDIANA

Tuberculosis in poultry and swine continues at a slightly reduced rate. The discrimination at slaughter markets toward reacting animals that must be identified but are not indemnified reduces the number of owners that are interested in pursuing systematic program work.

We have had the active cooperation of the voluntary human tuberculosis agencies and have had the privilege of participating in some of their programs.

We were rather disappointed during the year to learn that our largest slaughtering establishment had changed their method of handling hides during slaughter so that identity to hide and ear identification was lost. This plant recently discontinued slaughtering operations.

Additional numbers of animals are being identified on the Market Cattle Testing program since backtagging was expanded and is now being conducted at all sale barns in the State. The State has issued instructions to dealers regarding their obligation to keep records. However, difficulty in tracing animals continue, particularly through dealers.

IOWA
(National Animal Disease Laboratory, Ames)

During the year, 2,952 specimens were received for examination for tuberculosis and paratuberculosis. This was an increase of 525 specimens over the previous fiscal year. Of the 2,952 specimens received, 2,899 were cultured for the presence of M. bovis, and 53 were examined by smear for the possible presence of M. paratuberculosis.

Isolations of M. bovis were made on 563 animals. Of these, 547 were from cattle, 11 from hogs, 2 from deer, 1 from an elk, 1 from a tapir, and 1 from a guinea pig that had previously been inoculated experimentally with an M. bovis culture. The typing on 39 other isolants has not been completed.

M. avium was isolated 229 times. Of these, 177 were from cattle; the remainder came from hogs, chickens, goats, deer, mink, and wild birds.

Four isolations of M. tuberculosis were made. Three of these were from zoo primates, and one was from a zoo rhinoceros that had died from a metabolic disturbance, but on post mortem a small lesion resembling tuberculosis was found. From this lesion the M. tuberculosis isolation was made.

Of the 53 specimens submitted for Johne's disease examination, 12 were positive and 41 were negative.

The differentiation of M. avium and Runyon Group III isolants by serology as a routine procedure was approved during the year. In over 250 trials, this procedure has agreed in 88 percent of the cases with the results obtained by inoculation of chickens. The use of serology as a typing procedure allows that only a few rough strains or problem cultures need to be typed by chicken inoculation. This has reduced by 1 month the time needed to determine whether an isolant is M. avium or Runyon Group III.

IOWA
(Des Moines)

Twelve ADE forms 6-35 positive for M. bovis were received. We believe we will have the herd of origin located in each case.

Currently two red-flag herds exist. No herds were depopulated by the payment of indemnity for nonreactors. However, three herds were depopulated. There is no State authority for paying indemnity to owners of nonreacting animals.

Programs for poultry, swine, and wildlife provided only for voluntary participation. ANH Form 6-35 for swine provides a means of notifying the herd owner of the problem and an opportunity to prevail upon him to have his herd tested. Poultry is examined only when mammals are infected on the premise. Contact is maintained with the Conservation Department. Wild animal specimens are submitted to the Diagnostic Laboratory at Iowa State University. No reports of tuberculosis in wild animals were received during the past year.

Constant contact is maintained with the Iowa State Board of Health. Information is exchanged regarding cases of human tuberculosis and infected premises. We performed three herd tests at the request of the Board of Health, and they provided us with human history in two other cases.

Area and district veterinarians as well as the TB epidemiologist contact slaughtering establishments to determine whether they meet the requirements for an accredited establishment, or attempt, through the USDA Meat Inspection Division, to have the plant attain this status.

Efforts have continued to establish use of the 3-part tag in all plants. The MCT Program was established during the current fiscal year. Efforts are being made to assure that MCT tags are applied at markets, that they remain on until slaughter, and that recognition of MCT tags at packing plants is high.

KANSAS

High lights of progress of activities during the fiscal year 1966 follow:

As result of ADE form 6-35, an investigation involving two neighboring States and Kansas, disclosed a badly infected range and feeder herd with a total of 141 reactors. On slaughter, post mortems revealed generalized tuberculosis in 46 animals that were condemned, 11 were passed for cooking, 51 had gross lesions, and 64 were with no gross lesions. Thirty-one nonreactor cows were tagged, branded, and sold for slaughter with the payment of regular indemnity. On post mortem examination of these 31 cows, 2 were passed for cooking, 3 more had gross lesions, and 26 were NGLs. The remainder of the herd will be fed out and sold for slaughter before restocking the premises.

Specimens were shipped to NADL, Ames, Iowa, and M. bovis was isolated. Blood samples were obtained for the heifers and steers before injection of tuberculin for the purpose of furthering research at NADL, and other research laboratories on serological test for the detection of tuberculosis. Blood samples were also collected from reactors at slaughter to determine the effect of the injection of tuberculin on the double gel diffusion test.

One veterinary scientist from the University of Wisconsin injected 6 antigens in 60 steers at random to determine the number of tissue responses in known tuberculosis infected herds.

The State has the authority to pay indemnity for nonreactors when it is considered advisable by the State officials; the payment, however, is charged to the county involved.

No tuberculosis infected herds in Kansas are classified as red-flag herds.

Upon a report from a poultry dressing plant in a neighboring State that lesions of tuberculosis were found in chickens, the flock of origin was tested, and one reactor was disclosed. Several poultry flocks were tested on premises where cattle reacted to the tuberculin test, but no gross lesions were revealed.

One herd of swine was tested as a result of a report from meat inspection that tuberculosis-like lesions were found in several swine on a boar testing project. On testing the herd of origin, two reactors were disclosed.

This office has a working arrangement with the State Board of Health that we report to it when an owner's tuberculin reactors reveal gross lesions on slaughter.

Attempts to maintain standards in accredited slaughtering plants are accomplished by semiannual visits to the establishments by our field men. Good relations were maintained by this office and meat inspection personnel.

Maintaining the identification of cattle from the farm through slaughter has progressed because the backtagging of market cattle was made compulsory in August 1965.

KENTUCKY

The Tuberculosis Eradication program in Kentucky for fiscal year 1966 has produced gratifying results. This was the first entire fiscal year in which we could utilize Market Cattle Testing data. As a result, we have reaccredited all 19 counties by this means alone. Area testing for reaccreditation has eliminated one of the major problems of our eradication program. During the fiscal year, we tested approximately 51,000 head of cattle and screened at accredited establishments approximately 107,500 head of backtagged cattle that were traced to herd of origin. The total coverage for the fiscal year was approximately 158,500 head. Compared with 1965 data, accomplishments of the past year represent a 12-percent decrease in animals tested and a 20-percent increase in market cattle screened. This gives an increase of 8 percent in total coverage for the fiscal year.

During the 1966 fiscal year, a total of 51 animals was classified as reactors, but only 10 of these showed lesions. Of these 10 lesion animals, laboratory reports have not been received on 5, and only 2 of the other 5 were suggestive of tuberculosis. Both tuberculosis animals were in one herd and were found as the result of a form 6-35 case that involved a confirmed M. bovis animal.

As mentioned in ANH Division notice dated June 6, 1966, our experience with M. bovis herds in Kentucky for fiscal year 1966 has been limited to the low number of M. bovis infected herds. We had a total of 52 form 6-35 cases for the fiscal year and 6 of these involved confirmed M. bovis animals. However, only in the one herd, mentioned above, did we find tuberculosis after a herd test. In this herd, even though the 6-35 animal was confirmed M. bovis and two of the three reactors found on the herd test were condemned at slaughter, tuberculosis apparently had not spread. The other reactor was NGL, as was the remainder of the herd when the owner depopulated at his own expense. Also, the related herds tested as a result were negative.

Our only other experience is with a probable M. bovis herd, which was found near the end of the fiscal year. This herd was originally tested in April 1966 by a practitioner for compliance with the milk ordinance, and he classified seven animals as reactors. Six of these were NGL and, the other one had a skin lesion reported as being suggestive of tuberculoid dermatitis. On the retest in the latter part of June 1966 by our personnel, 18 of 25 animals were classified as reactors, but only 5 of these showed lesions. (Specimens of these five were not submitted to NADL, Ames, Iowa, until June 28, 1966, and are the five laboratory reports referred to in paragraph one as not having been received.) Based on the evidence of tuberculosis found in certain glands at slaughter, the owner was advised to depopulate, and we paid indemnity on the remaining seven animals as exposed. No gross lesions were observed in these seven. It has not been necessary to designate any red-flag herds because of the limited number of herds found with M. bovis. The evidence of tuberculosis in other species in Kentucky is sporadic, and we have no specific eradication program for swine or poultry. When there is evidence that these species are associated with a suspect or infected herd, thorough epidemiological procedures are utilized.

In all cases where reactors were found and lesions were observed, the Public Health Department was notified and appropriate action was taken as indicated. With few exceptions we have had good results in maintaining identification of cattle from farms to slaughter establishments. As mentioned before, the one case in which we found tuberculosis on the farm as a direct result of a form 6-35 investigation, the animal was traced through the stockyard to the farm by use of the backtag from an out-of-State slaughtering establishment. In general, this case is an example of the results we had in maintaining identification. We are also maintaining the prescribed standards of the accredited establishments by use of a slightly modified version of the Surveillance Report - Cattle Slaughtering Establishments, which was sent to all States.

LOUISIANA

The tuberculosis program during fiscal year 1966 has been an example of the unpredictable progress toward eradication. Through the first 9 months, the infection rate was less than 0.02½ percent. Seasonal testing of cattle as they were driven to summer pastures in the swamp area of Cameron Parish brought out an unexpected flare-up of infection. During the last 3 months of the fiscal year, 224 reactors were branded in the State, of which 219 were from the Cameron area. The extent of the problem is alarming, although we were aware of some residue of infection in the Cameron area because two ADE forms 6-35 traced back to this parish.

A total of 27 herds was tested in connection with these two ADE 6-35 reports, and 104 reactors were found in 9 contact herds. An additional 21 previously infected and contact herds were tested for reaccreditation, in which 109 reactors were found. Most laboratory reports show compatible with tuberculosis, and many show final results of M. bovis. Although the rest of the State is practically free of bovine tuberculosis, we realize that the Cameron area must be given special attention for years to come.

Two red-flag herds were established as a result of ADE forms 6-35 tracings, and additional red-flag herds will be designated in the area of new outbreaks. Depopulation of these herds is not practical, because of the size and difficulty in handling them.

Five additional parishes are due for reaccreditation in 1966-67, and we do not expect to find infection in any of these except Calcasieu, which is adjacent to Cameron Parish, where the large number of TB reactors was found in May and June. Cattle are moved between pastures in these two parishes and complete eradication of TB in these herds involves cattle owners in Cameron and Calcasieu.

Eight slaughtering establishments in this State are approved as accredited establishments for TB post mortems; two of these are under Federal inspection, and the others are municipally inspected. Area veterinarians are in the process of surveying the eight accredited establishments in relation to the Tuberculosis project. In addition, the Livestock Sanitary Board has employed a veterinarian who is working full time with representatives of the State Meat Inspection Service. Some plants are entering the program on a voluntary basis; later, this probably will become compulsory.

To comply with the new State requirements, a packing house will need to have either full time veterinary service or services of a layman under general supervision of a veterinarian. These men will be trained in federally inspected packing houses in procedures of inspection and incising lymph glands. All Federal veterinarians now assigned in Louisiana have already completed courses with the Meat Inspection Division on lesion identification. We feel that during this current fiscal year a number of packing houses going under the standards set up by the State will qualify as accredited establishments under Federal standards. Some of the municipal houses now considered accredited possibly will be removed from the approved list, because investigations indicate that lymph glands are not routinely incised.

We have excellent working relations with the Louisiana Department of Health and its local branches. Owners of dairies are reminded by letter from the local health units (copies furnished this office) of the necessity for testing their herds by the required date. When difficulty arises in having owners present their cattle for the required testing for reaccreditation purposes or for required retesting of an infected herd, Health Department officials fully support our requirements and are successful in getting these owners to cooperate. Any time an infection is found in a dairy herd, the State Department of Health is notified and it contacts the owner in order that members of the family and others who have been in contact with the cattle can have a tuberculin test and chest x-ray. When tuberculosis is diagnosed in a member of a family owning cattle, the Health Department notifies us so that we may obtain a test of the cattle.

MAINE

No evidence of bovine tuberculosis has been observed in Maine during fiscal year 1966.

We plan to complete area testing in Oxford and Penobscot Counties this fall. If no infection is disclosed, these two counties will be recommended for a tuberculosis-free classification in December 1966 and January 1967, respectively. Maine will then achieve a State-wide TB-free status.

We are emphasizing the reporting of all dermal reactions to the tuberculin test, the collection and proper preservation of all tissues showing lesions suspected of being tuberculous for laboratory examination, and prompt and thorough epidemiological investigation of reports on ADE forms 6-35 and 6-4.

On rare occasions tuberculosis is diagnosed in small flocks of older poultry in Maine. The State director of poultry diseases has been assigned the responsibility of investigating all such cases and eliminating infection.

Most Maine cattle are slaughtered at federally inspected slaughtering establishments in Maine, New Hampshire, and Massachusetts. All are backtagged and practically all bear permanent identification eartags. Slaughtering procedures in Maine permit identification of individual animals throughout the operation. The State office maintains a permanent record of eartags applied by accredited and regulatory veterinarians.

MARYLAND

For the second year, we have not had a red-flag herd or detected an M. bovis infected herd. In the fiscal year 1964, it became evident that a number of herds were badly infected with tuberculosis and an intensive testing program was started. The situation now appears to be under control. That outbreak showed how quickly an undetected condition can grow and the tangible results of immediate concerted action.

Several cases of tuberculosis in poultry and swine were detected during the year. One swine breeder in the State has required a tuberculosis test on all replacement animals. A test of one such replacement showed a response to the tuberculin test and had extensive mesenteric and head lesions on post mortem.

Another fatal case of tuberculosis was found in a wild opossum. An isolant from the opossum was sent to NADL where it was classified as Runyan Group Three.

Four fatal cases of M. bovis were reported in ungulates kept in a zoo.

The veterinarian in charge at a Consumer and Marketing Service poultry plant that dresses adult birds frequently submits information pertaining to lesions of tuberculosis found on regular kill.

Since the MCI Program began in Maryland 3 years ago, more than 15 percent of the cattle population over 2 years of age has been slaughtered each year at accredited establishments.

A most encouraging action was taken in June 1966 when the Maryland State Veterinary Medical Association went on record as unanimously supporting State-wide Meat Inspection.

Good liaison and the interchange of data and occasional specimens with the other organizations directly involved in tuberculosis activities in the State have taken place.

A satisfactory work arrangement has been established with the Johns Hopkins branch of the Leonard Wood Memorial Laboratory, which conducts a Leprosy Research Program in which M. johnei is used. Because of some similarity between leprosy and TB skin lesions of cattle, the laboratory is now attempting to grow skin lesion organisms from specimens taken from local cattle. The laboratory has also been supplied with fresh tissue from advanced cases of Johne's disease in cattle and goats.

A joint meeting of regulatory veterinarians from ANH and Maryland Livestock Sanitary Service was held with the information office of the Extension Service of Maryland to make sure that all facets of the various programs are being continually brought to the attention of interested persons.

Retesting of TB suspects is always done by Regulatory veterinarians and is usually performed with disposable plastic TB syringes and needles that are relatively inexpensive.

The following conditions have now been recognized in Maryland:

1. That the TB test response problem is Statewide.
2. That some herds have had the test response problems for years, though records did not indicate the magnitude of the situation.
3. That more responses to the test are being reported because programs and results are explained.
4. That a tendency is to record an ever-increasing number of negative responses, which reduces the number of suspects. When such negative responses are called in transient herds and herds of unknown history, it becomes a matter of concern.
5. That some badly infected farm poultry flocks have been found throughout the State.
6. That cases of TB in swine are scattered through the State, but as with the poultry, there is as yet no program for control or eradication.

MASSACHUSETTS

As a result of a traceback from an animal showing lesions of tuberculosis on regular kill, M. bovis infection was found in a dealer's herd. Reliable epidemiological investigation and tuberculin testing of exposed or origin herds revealed that the infection is localized in this herd. The infected herd will be retested according to approved plan. This particular case is the only known case of M. bovis found this fiscal year in Massachusetts. The State has no red-flag herds, and no infected herds were depopulated with indemnity.

The Consumer and Marketing Service has not reported tuberculosis in poultry killed in plants operating under the Poultry Inspection Division. A program for the eradication of tuberculosis in swine has not been started.

Contacts by ANH veterinarians are regularly made with personnel in the Meat Inspection Division and Poultry Inspection Division to insure proper understanding and cooperation in traceback procedures. Identification of cattle from farms through slaughter is being maintained at a high level of efficiency.

A pocket of *M. bovis* infection was found in a pen of Sika deer at a local zoo. The involved deer were tuberculin tested, and infected deer were destroyed and incinerated.

Three of the fourteen counties in Massachusetts are officially approved as tuberculosis-free areas. An additional eight counties have been submitted to the Hyattsville staff and are pending approval.

MICHIGAN

Significant gains were made during fiscal year 1966 in eliminating bovine tuberculosis in Michigan cattle. At the close of the 12-month period, the number and percentage of tuberculin reactors and reactor herds were the lowest on record. In addition, the number of herds under quarantine, the number of laboratory confirmed lesions found on straight kill cattle, and the number of gross lesions found in reactor cattle were at record lows for the State.

One herd with laboratory confirmed *M. bovis* infection was depopulated with indemnity paid on nonreactor animals. This brings the total of depopulated herds to nine during the last 3-year period.

Two red-flag herds remain under quarantine at the close of the fiscal year. The owners of these herds would not consent to depopulation, and all out efforts are being made to eliminate the infections with testing procedures. At this time, both red-flag herds have passed one negative test.

Continued tests have been conducted on deer at several private deer parks in the State. One park that had considerable infection in previous years now has reached a negative status.

Cooperation with zoological park veterinarians continued, and laboratory confirmed tuberculosis was disclosed in eland, water buck, and whooping cranes. Plans are being formulated for trial isoniazid therapy procedures on certain selected animals at one of the zoological parks.

Close working relationships with public health agencies have continued during the past year. Division representatives have served on committees, participated in conference, spoken at meetings, and consulted with Michigan Tuberculosis and Respiratory Disease Associations.

The widely publicized outbreak of human tuberculosis in a Detroit nursery school has greatly aided continuing interest in tuberculosis.

The special epidemiological study in one township that was in progress for the past year and a half was concluded. Much important data and information involving nonspecific caudal fold tuberculin sensitivity, the apparent role of tuberculoid skin lesions as a cause of much of the nonspecific sensitivity, and the evaluation of comparative tuberculin tests were obtained in the study.

There was continued success in maintaining identification of cattle from farm through slaughter. This was possible because of effective laws and regulations requiring livestock dealers and auction markets to maintain appropriate records of transactions.

It is expected that much progress will be made during the coming year to improve the slaughtering surveillance at the 285 plants coming under the new State Meat Inspection program. A number of plants will probably be submitted to the list of accredited establishments.

MINNESOTA

The testing of almost a half million cattle in fiscal year 1966 resulted in 25 reactors from 16 herds. This reflects an apparent infection rate of less than 0.01 percent for the third consecutive year. Reactors from two of the infected herds showed lesions indicative of M. bovis infection, and an isolation was made from one of the herds. The latter herd was extensively infected, and the owner voluntarily depopulated even though the State Livestock Sanitary Board has authority to pay indemnity on nonreactors in such situations.

Testing of poultry and swine is conducted only when the possibility of infection is indicated. One chicken flock was tested after a practitioner had clinically diagnosed tuberculosis in the flock. The flock was extensively infected, and the owner was advised to dispose of all birds. The swine and cattle on the farm were also tested; only swine that had contact with the chickens reacted.

Although much needs to be done to more effectively trace back lesioned animals disclosed on regular kill, frequent contacts with Meat Inspection personnel have stimulated interest in this phase of the program. Continuing contacts with practitioners, the University, and Public Health officials are made.

A marked decrease in post mortem reports for backtagged animals during the past 6 months will force the use of area testing again this year. Until financial arrangements can be made for meat inspection veterinarians to submit post mortem reports on backtagged cattle, the coverage for tuberculosis will probably not be sufficient to reaccredit areas under the MCT program.

MISSOURI

Laboratory isolations of M. bovis were made in three Missouri herds during the year. These infected herds were disclosed as the result of ADE form 6-35 investigations. One herd was depopulated, and the other two were quarantined for additional testing.

Backtags have been instrumental in solving five ADE form 6-35 investigations since the Missouri MCT program started in September 1965. It is expected that this program will provide an increasingly effective tool in tracing and locating infected and exposed animals and herds. A much improved liaison between slaughtering establishments, Meat Inspection Service, stockyards, and field personnel has been developed.

In March 1966, after the MCT program has been in effect for 6 months, the accomplishments to that date were carefully studied. Using this information as a base, we projected accomplishments for the rest of the year, and it was clearly shown that the MCT program in Missouri would fulfill the requirements for reaccreditation set forth in the Uniform Methods and Rules. On the basis of this information, routine on-the-farm testing for reaccreditation purposes was discontinued in counties due after September 1, 1966.

As a result of all testing in Missouri during the past year, 46 reactors were disclosed in 31 herds. Ten of the reactors showed lesions on post mortem, and 32 animals had no gross lesions.

Public Health agencies are immediately notified when tuberculosis is found in livestock. The Public Health officials, in turn, contact all possibly exposed persons and urge them to be tested for tuberculosis.

No formal program for the diagnosis or eradication of tuberculosis from swine, poultry, or wild animals now exists in Missouri, nor has there been any evidence to indicate an increase of the tuberculosis incidence in these species.

No red-flag herds are in Missouri.

All counties entitled were reaccredited during the year.

MISSISSIPPI

During the fiscal year 1966, 56,767 head of cattle were tested for tuberculosis in Mississippi. Two reactors were disclosed in two herds as a result of these tests. No gross lesions were found in either of these reactors when slaughtered. No reactors were found as result of retest of all cattle in these herds.

No red-flag herds are in the State, nor are any other herds under quarantine for tuberculosis at this time.

Eight ADE form 6-35 cases were received during the year. Two of these were reported negative for mycobacterium tuberculosis by the laboratory, five were reported as suggestive or compatible with a diagnosis of tuberculosis, and one was condemned when inspected on regular kill. We were successful in locating and testing herds of origin in four of seven investigations made. No infection was revealed on tests of these herds. One case is incomplete at this time, but the herd has been located and is scheduled for test at an early date.

We were unsuccessful in locating three herds of origin. This was due to inadequate records kept by traders handling the diseased animals and possibly to a delay in receipt of the forms from the meat inspection veterinarian and to inadequate identification of animals at time of slaughter.

No herd tests were conducted in connection with form 6-4A reports received. One investigation is incomplete at this time.

The MCT program is progressing well, and the utilization of this program has enabled Mississippi to reaccredit one additional county during this year, making a total of four counties qualifying for reaccreditation under the MCT program. It is planned to reaccredit most of the counties under provisions of Paragraph 12 of the Modified Accredited Area Plan. All the counties are up-to-date on accreditation.

Thirty-six counties qualify as tuberculosis free under the provisions of paragraph 13(a) of the Uniform Methods and Rules. It is doubtful if Mississippi will be able to meet all the requirements of part IV by June 30, 1970; therefore, we do not anticipate placing additional counties on the accredited free list.

No heavily infected herds are in Mississippi; therefore, the depopulation of M.bovis infected herds with indemnity for nonreactors has not been necessary. The State does not have the authority to pay indemnity for nonreactors.

No tuberculosis was reported in poultry, swine, or wildlife in this State during the year.

Very good cooperation has been received from the Health Department in the State on Grade A Dairies. A test of all of these herds is required every 3 years in order for them to meet health department requirements.

All accredited slaughtering plants except one operate under Federal meat inspection supervision. They are in compliance with requirements except that identification of hide to carcass has not been accomplished in all cases. The process of animal identification from farm through slaughter has proved quite effective. The one problem not yet satisfactorily solved has been that of traders who do not keep accurate records on cattle they handle. We feel that better identification of cattle at time of slaughter will soon be accomplished by marking of hides with crayons at most of the accredited plants.

NEBRASKA

No red-flag herds were in Nebraska during fiscal year 1966. One entire herd of 34 head of cattle was condemned for slaughter on the basis of clinical symptoms, history, and response to the Johnin test. Indemnity was paid by the joint agencies on the entire herd. At present, a working agreement with the State to permit payment of indemnity for nonreactors to the tuberculin test in order to depopulate an infected premise has not been concluded. Work in this area is under consideration.

Accreditation of all 93 counties was maintained through fiscal year 1966. Almost 5,000 herds containing 77,000 cattle were tested. Our documentation and presentation to State authorities of areas where loss of accreditation seemed imminent resulted in adjustment of fee schedule to encourage greater participation by practicing veterinarians and some additional help by State personnel.

All full time veterinarians are requested to observe and, when advisable, perform post mortem examination of poultry on premises where cattle reactors are found. A total of 567 flocks of 59,000 fowls was observed; 149 fowls were autopsied, of which 107 showed lesions in 84 flocks. The following primates were tested by the opthalmic method with negative results at the Henry Doorly Zoo, Omaha, Nebr., by Warren D. Thomas: one Lowland gorilla, two Vietnamese stump Tail macaques, two Dusky lutongs, one Rhesus macaque, one DeBrazza's guenon, four Stump Tailed macaques, two Silver Leaf langurs, six Geleda baboons, one Green monkey, two Proboscis monkeys, and two Blue monkeys.

Owners of infected animals are advised to contact Public Health Agencies for possible tests for diagnosis of tuberculosis.

The list of accredited slaughtering plants (ANH Division memo 552.19, dated September 17, 1964) has been revised. Because at least two such establishments failed to obtain hide identification when eartags were unavailable on lesioned nonreactors, it will be necessary to reconsider and evaluate the accredited status of these plants, unless actions are taken to maintain certain identification. Through personal contacts and liaison with Meat Inspection veterinarians, we are striving to improve this situation and some progress has been made. However, the manner in which the slaughtering procedures are carried out in some of the larger plants makes identification of hides with the carcass difficult. This is especially true on the so-called on-the-rail procedures where the hide is dropped to the lower level before the inspection of the viscera is completed.

Eartagging of range animals is not practiced except for official brucellosis vaccination.

The recent adoption of the systematic brucellosis eradication program in all counties of the State will result in better animal identification and thus help traceback efforts that are so vital to progress in final tuberculosis eradication.

At present, there is lack of control of dealer records. It is hoped that the State will be able to upgrade their efforts in this area. Recent changes are encouraging. Individual dealers do keep some records, but for the most part many are by memory only.

MONTANA

M. bovis infection was not confirmed in any Montana herds during fiscal year 1966. Four herds were under quarantine for tuberculosis during the year. Two dairy herds had one reactor each on their routine tuberculin test. No gross lesions were reported for one herd. The other dairy herd revealed lesions suggestive of tuberculosis. No acid-fast bacilli were observed or isolated. One reactor was found on a herd test as the result of an ADE form 6-35 traceback. M. avium was isolated from the lesions submitted to NADL. The fourth herd was quarantined because an imported bull reacted to the tuberculin test. No lesions were found on post mortem.

The Market Cattle Testing Program identified 113,593 cattle that were slaughtered in tuberculosis accredited establishments. This was an increase of approximately 31,500 over fiscal year 1965. Nineteen counties were reaccredited. Three of those counties could have been reaccredited by MCT alone.

Seventy-one ADE form 6-35 reports were received during the year. Some of the investigations have not been completed. M. bovis has not been isolated from any herds involved in these investigations. NADL reports received to date list 39 lesions suggestive of tuberculosis, 23 M. avium isolations, and 2 Runyon Group IV isolations.

NEVADA

The reaccreditation status of Nevada's 17 counties is current.

No M. bovis has been located either on post mortem or by tuberculin testing. All testing is done by full-time State or Federal veterinarians, and no reactors were disclosed this year. The State does have authority to pay indemnity for nonreactors when considered necessary by State officials. However, we have not depopulated any herd nor do we have any red-flag herds.

All ANH forms 6-35 referred to Nevada have been investigated, and none were found to be of Nevada origin.

No tuberculosis has been diagnosed in poultry, swine, or wildlife. Investigation of poultry slaughtering practices has revealed that poultry are slaughtered in the neighboring State of California, and plans are being made to get inspection reports.

Public relations with the Public Health agencies are at a high level.

One federally inspected slaughtering plant is accredited, and its cooperation has been very good in maintaining identification. We have no State inspected accredited establishments.

MCT program has progressed better than anticipated, and working relations with dealers and markets have improved to a point where identification of most animals has been maintained. Most State Fee Brand inspectors are applying market tags on slaughter cattle. These efforts should make it possible to meet the TB-free requirements.

Two Nevada veterinarians have received training in post mortem examination procedures, and another veterinarian plans to receive training in fiscal year 1967.

NEW HAMPSHIRE

Evidence of bovine tuberculosis has not been observed in New Hampshire during fiscal year 1966.

At least 75 percent of slaughter cattle originating in New Hampshire are slaughtered in the one federally inspected plant within the State or at Federal plants in Massachusetts. Slaughtering procedures permit identification of individual animals throughout the operation, but backtags are not applied. A permanent record is maintained at the State office of eartags applied by accredited and regulatory veterinarians.

Only one establishment has an on-the-rail inspection system. In this plant a three-part tag insures identification of each animal throughout the slaughtering operation. The State is in the process of formulating laws and regulations for a State meat inspection program to include all State-licensed establishments. When activated, this program will provide additional tuberculosis surveillance of slaughter cattle.

We are emphasizing the reporting of all dermal reactions to the tuberculin test, the collection and proper preservation of all tissues showing lesions suspected of being tuberculous for laboratory examination, and prompt and thorough epidemiological investigation of reports given on ADE forms 6-35 and 6-4.

NEW JERSEY

The most noteworthy achievement in New Jersey is the absence of any laboratory-confirmed tuberculosis. This is particularly significant, since testing included approximately half the cattle and goats in the State in addition to the retest of reactor herds and suspects. The Retesting of herds from which suspects or reactors had been disclosed the previous year was started.

No red-flag herds exist in New Jersey at this time. The herd previously so designated was depopulated last year through slaughter with the payment of State-Federal indemnity.

The eradication of tuberculosis in poultry is practiced as it appears. Swine tuberculosis is not a problem, as it is rare that we get a reported case.

Liaison is maintained with Public Health officials at county and State levels whereby information is exchanged on herds and families where tuberculosis is disclosed.

Most livestock from New Jersey is slaughtered in Federal slaughtering establishments in New Jersey, Pennsylvania, New York, and Connecticut. Most of the dairy cull stock is slaughtered in the latter three States. Sufficient information has been provided by Meat Inspection to trace cattle to their herds of origin on direct shipments or to markets on indirect shipments. Identification of cattle to their herds of origin has been facilitated through excellent cooperation of the

markets and the maintenance of required records by dealers, supplemented by inspection records for imported animals. Further progress was made through the passing of legislation requiring dealers to keep records of movements of sheep and swine.

Standards of inspection and identification maintained in federally inspected slaughtering establishments located in New Jersey have resulted in these establishments being accredited.

NEW MEXICO

During fiscal year 1966, more than 14,000 tuberculin tests were made, and one reactor was found. This reactor was NGL on Federal post mortem.

This State had no problem herds. The number of accredited slaughtering plants did not increase.

Poultry, swine, or wildlife were not tested.

Effective July 1, 1966, New Mexico instituted a State-wide meat inspection system. Once this system is completely organized, it is expected a few more plants will be accredited.

NEW YORK

Three red-flag herds were in the State at the beginning of the reporting period. All were released from quarantine during the year. At the close of the reporting there were no red-flag herds.

Depopulation of M. bovis herds is impossible because of the New York State Department of Agriculture and Market's regulation that prohibits the paying of indemnity for other than reactor cattle.

Poultry flocks known to have tuberculosis are tested to determine the percentage of infection. Any cattle on the premises are tested and put under surveillance.

Swine found to have evidence of tuberculosis on post mortem examination are reported to the New York State Department of Agriculture Division of Animal Industry. A traceback is made. All swine and cattle herds that have had contact with the case are tuberculin tested and placed under close surveillance.

There is no established wildlife program. In the past reporting period a cooperative program in the testing of deer has been carried on with Bronx and Syracuse zoos.

Cattle dealers and markets are required by law to maintain necessary records. A New York livestock aide is present at all livestock markets on sale days to supervise the movement of cattle. Any cattle without eartags are tagged by him at that time.

NORTH CAROLINA

Since we have not had a confirmed case of bovine tuberculosis in more than 3 years, it is rather difficult to say what progress had been made in eradicating bovine tuberculosis during fiscal year 1966. During fiscal year 1965, we had 80 reactors to the tuberculin test. During fiscal year 1966, we had 34 reactors to the tuberculin test. None of the reactors in fiscal year 1965 or fiscal year 1966 revealed gross lesions of tuberculosis or had laboratory confirmation as bovine tuberculosis.

We have had very close association with State Meat Inspection Service, and we feel that this Service is steadily improving to where we have confidence in the operation of establishments under their supervision with respect to accredited status. They have shown that they will cooperate with us in every way possible.

Progress has been made in the identification of cattle moving from farms to livestock markets. One problem that has improved but not completely solved is that of obtaining the true herd of origin when so-called pen hookers buy cattle in the yards of livestock markets and sell them in their name, rather than in the true herd owner's name. We are now getting these people to give the name of the original owner on the weight or sales ticket. As we have stated, this is not 100 per cent identification, but our livestock inspectors have made considerable progress with these people. Fortunately, they only purchase and resell a small percentage of the cattle in markets where this procedure is permitted.

Eleven counties were submitted as qualified for tuberculosis-free status during fiscal year 1966. Of the 100 counties in the State, a total of 83 counties is now so qualified.

NORTH DAKOTA

In comparison with other years, we received an exceptionally large number of ADE Forms 6-35 this fiscal year. A total of 35 was processed and submitted to Hyattsville.

One M. bovis infected herd was disclosed when two lesioned animals on separate ADE Form 6-35 reports were traced to an owner whose herd was tested negative in May and October 1965. One of these lesioned animals, and perhaps both, were purchased in 1962 from another North Dakota herd in which 25 reactors were disclosed on initial test. Additional lesioned reactors have been found on two retests, and the herd is now considered as red-flag. We considered depopulating this herd, but the owner was not agreeable.

Sales from an ADE Form 6-35 herd that was depopulated because of extensive M. bovis during fiscal year 1965 led to another infected herd. This herd has received two negative retests and was released from quarantine.

The State has authority to pay indemnity for nonreactors when considered advisable.

It is our opinion that tuberculosis is prevalent in North Dakota poultry flocks. Perhaps it is also present in swine, but we received no ADE form 6-35 reports on swine in the fiscal year 1966. When laboratory findings indicate avian tuberculosis, and when practicing veterinarians diagnose the disease, we investigate the flocks of origin. Owners of diseased flocks are advised to depopulate, thoroughly clean and disinfect, and follow the "All Pullet Flock" type of management. Where needed, owners are offered the use of our power sprayer for this disinfection. No additional plans have been promulgated for eradication of tuberculosis in poultry, swine, or wildlife.

We have good working relations with the State Public Health officials. Recently, the assistant Federal veterinarian in charge met with the State Health Officer and discussed reporting of communicable diseases, including tuberculosis. They agreed to advise us of all cases of M. bovis isolations from humans. We will inform them of all cattle herds infected with M. bovis. We have scheduled the tuberculin test of one herd of cattle whose owner was recently found infected with tuberculosis.

Seven State licensed slaughtering establishments were approved as "Accredited Establishments." These plants are small, and we anticipate no difficulty in identification of cattle through slaughter. We will review the standards in these plants at least semiannually.

North Dakota livestock dealers are licensed by the Dairy Division of the State Department of Agriculture. The North Dakota Veterinary Medical Association has recommended that this licensing be transferred to the North Dakota Livestock Sanitary Board. This would strengthen their position in dealer cooperation. Dealer control laws and regulations are not presently adequate to require complete records and identification of all cattle purchased and sold.

OHIO

There were 12 M. bovis isolations reported during fiscal year 1966. Five of these isolations involved a common source, a recent farm auction. Tracing from this source disclosed six herds with gross lesions indicative of M. bovis. Because of the prompt epidemiological investigation and testing of contact herds, we believe we have prevented additional spread of this infection. Our total ADE form 6-35 reports were the same as in the fiscal year 1965, but we were much more successful in determining the herd of origin in 1966, mainly because of greater cooperation from the meat inspectors on animal identification.

Only one red-flag herd was in the State during fiscal year 1966, and this herd has had two negative tests since the last reactor was disclosed.

We are presently visiting all accredited establishments to assure that prescribed standards are being followed. This surveillance should be much easier in the future because Ohio now has a State meat inspection program. During these visits, animal identification and the need for submitting tuberculous-suspicious tissues to NADL are discussed. Meat inspection personnel in general are very sympathetic to our needs, and their cooperation has improved this past year.

The incidence of tuberculosis in swine has continued to decrease; only one ADE form 6-35 was reported. Most of this improvement is a result of improved animal husbandry practices and the segregation of swine and poultry. In each case where tuberculosis was diagnosed in poultry, measures were taken to inform the owner of the dangers of tuberculous chickens, and in all but one case the entire flock was slaughtered, followed by complete cleaning and disinfecting before the flock was replaced with young birds.

We recently completed a survey of all federally inspected poultry processing plants to determine the possibility of locating the origin of tuberculous poultry. Under present marketing conditions, this could be worked out and be an asset to our tuberculosis eradication program.

OKLAHOMA

Arrangements are being made to induce as many auction markets as possible to use the backtag for a salebarn tag as well. This should increase the number of slaughter animals identified to us.

Possibly 10 of the 28 TB-free counties may receive enough slaughter-identified cattle to remain free with very little testing. It is doubtful if slaughter identification can be stepped up enough in the remaining counties to preclude testing other than Grade "A" Dairies when those counties fall due for reaccreditation.

A form was created for use by State supervisory personnel for checking their 43 slaughtering plants to insure that each one meets the standards for reaccreditation. The State has three Federal plants, all of which meet accreditation requirements.

An ADE Form 6-35 case study resulted in testing of a herd in which 15 responses were found. All were tagged and branded. M. bovis was isolated from two of the reactors. The herd was depopulated in July 1965. All involved herds that could be located tested negative. A complete traceback on everything connected with this herd was impossible, because fire had destroyed sale records at the auction market involved.

A beef herd of origin was located following another Form 6-35 report, and tests revealed 3 reactors. Two showed M. bovis and one was NGL. Traceback revealed that the lesion animal on the form 6-35 had been in another mixed herd. Both herds are still under surveillance.

Bovine tuberculosis that was found in an adjoining State was related back to a herd in Oklahoma. This herd was moved to another State before a tuberculin test was applied. Many of those cattle reacted in the terminal herd, and generalized tuberculosis was revealed in several of the reactors on necropsy.

Many herds in the State show responses that are apparently nonspecific responses. Most of them have a long standing history of slaughtered reactor animals showing NGL. Many of these herds harbor skin lesions, but there are more for which we have no answer. We are mapping all areas where responses are obtained and hope eventually to determine the various causes.

One clinical case was diagnosed after two or three persistent diarrhea cases had been sold to slaughter. The case was confirmed by the O.S.U. pathological laboratory. The herd, consisting of 243 beef animals, had originated in Texas and Louisiana.

All field veterinarians received training in TB post mortem procedure.

We have authority to pay indemnity on nonreactors when it is considered advisable by State officials.

No tests were performed on poultry or swine, but we expect to increase our efforts along this line. Nine buffalo were tested at the Wichita Wildlife Refuge near Cache, Okla. All were negative.

Arrangements are being made to expand cooperation with the Public Health agencies regarding TB eradication.

OREGON

The tuberculosis eradication program still occupies one of the major positions in the disease eradication program in Oregon. Eight herds are under quarantine in Oregon, all of which are in the 18 western counties, and M. bovis has not been confirmed in any of these herds.

We have had some reports that tuberculosis has been diagnosed in poultry, but the disease does not seem to be a major problem in swine or wildlife.

Close liaison is maintained with the Public Health agencies throughout the State.

All slaughtering plants that have State and Federal meat inspection are accredited, and we are able to maintain the identification of cattle most of the time. However, livestock dealers are not licensed in Oregon, and occasionally we have difficulty in tracing animals through dealers or feed lots.

The animal identification or backtagging program in Oregon is accomplishing desired results in maintaining identification to the herd of origin in nearly every case. We are emphasizing the need of obtaining better identification, and the State has assigned a veterinarian to coordinate the animal identification program.

It is hoped that Oregon may soon be in a position to request accredited-free status.

PENNSYLVANIA

Again this year, the county-wide program was conducted in about one-third of the counties, in which 320,000 cattle were tested. The accredited herd plan has reached a total of 9,738 herds. This is about 15 percent of the herds but accounts for 35 percent of the cattle population. A total of 758,877 cattle was tested this fiscal year, which is about the same as last year. The infection rate has significantly decreased to a new all-time low for the second successive year. The rate is now 0.05 percent, a decrease of about one-third from the previous year.

M. bovis infection has generally been found in those counties with a large dairy cattle population. Ten newly infected herds were discovered; of these, four were discovered by the testing programs and six as a result of ADE form 6-35 reports.

Traceback from ADE form 6-35 reports was successful in all cases. However, after extensive epidemiological studies, the original source of M. bovis infection was difficult to prove.

We have no indications that infection has spread from M. bovis herds. Tests of neighboring herds were consistently found to be negative, as were tests on other herds, which had possible exposure to infected animals.

Elimination of M. bovis from a herd can be accomplished by cervical testing, provided tuberculin responses and post mortem lesions do not reveal a high infection rate in the herd. With a high infection rate, entire elimination with indemnification is the procedure of choice.

No red-flag herds are in Pennsylvania at the present time.

A diagnosis of M. bovis was made by the laboratory from tissues from an elk that had died on a game farm. The remaining 18 elk were destroyed with about 50 percent showing gross lesions of tuberculosis.

Two poultry flocks were reported with tuberculosis this fiscal year. One flock was found as a result of an epidemiological study of an infected cattle herd; the other was traced to a farm as result of a traceback from a poultry slaughtering establishment. The heifers on this farm were negative to a tuberculin test.

All cases of tuberculosis in swine studied this fiscal year were confirmed by the laboratory as M. avium. All tracebacks in Pennsylvania this fiscal year resulted from ADE form 6-35 reports submitted by two slaughtering establishments operating under State inspection.

Standards for accreditation have been met by 21 establishments operating under State inspection and by 27 plants operating under Federal inspection.

A proposed Tuberculosis Surveillance Report for use at cattle slaughtering establishments to determine that plants are maintaining requirements under ANH Memorandum 552.19, dated September 17, 1964, is being processed for use in Pennsylvania.

Progress in market cattle identification has been substantial during the past fiscal year. All livestock auctions and stockyards, some slaughtering establishments and livestock dealers, and a few herd owners are applying backtags. The State pays for this application and recording of information.

The information regarding post mortem results from accredited establishments is being transferred onto data processing records. After completion it will be determined if post mortem information can be used for reaccreditation of areas.

Because most of the accredited establishments are located in the eastern half of the State, there is some doubt that coverage for the entire State can be expected.

RHODE ISLAND

No M. bovis infection has been disclosed in Rhode Island during fiscal year 1966.

M. avium infection was cultured from a sick starling by the Department of Animal Pathology, University of Rhode Island. No tuberculosis in poultry has been found during this fiscal year.

A good working relationship exists between farmers, dealers, slaughter establishments, and State-Federal regulatory personnel.

A trial program of finding and eradicating tuberculosis in swine has been started in Rhode Island. Market swine are identified with individual herd tattoo numbers. The tattoos are applied by USDA Animal Health Division livestock inspectors at the farms of origin before animals are shipped. When slaughtered, the Federal meat inspector at the local slaughter plant reports lesions of tuberculosis found in swine having identifying tattoos. The lesions are sent to the National Animal Disease Laboratory for histopathological and bacteriological examination. To date, mature swine from five piggeries have been tuberculin tested as a result of this traceback system. Five reactors were found in two of the swine herds tested, and we are awaiting post mortems of these animals.

None of the five counties in Rhode Island is presently designated as tuberculosis-free. One county has approval pending by the Hyattsville staff.

SOUTH CAROLINA

We have had no tuberculosis problems in South Carolina during this fiscal year, and no red-flag herds are in the State.

The State does not have authority to pay indemnity for nonreactors when depopulation is considered advisable by the State officials.

No reports of tuberculosis infection or post mortem reports of tuberculosis in poultry, swine, or wildlife were received this fiscal year.

The State Board of Health had no bovine-type tuberculosis diagnosed in humans.

Three slaughtering plants in this State are under Federal meat inspection, and two plants are operating under the Standards for Accredited Slaughtering Plants with State inspection. More State plants will be accredited as soon as we can establish a compulsory meat inspection program in South Carolina. We hope to get such a law passed during the 1967 session of the State Legislature.

The backtagging program has greatly improved the identification of cattle from farm through slaughter, including that of livestock moved through dealers and auction markets.

SOUTH DAKOTA

We had one ADE form 6-35 case for a steer with M. bovis infection. A test of the herd of origin revealed one lesion reactor. The herd will be retested annually as required for herds infected in the past with M. bovis. No South Dakota herds are in the red-flag category. State officials do not have authority to pay indemnity for nonreactors in herds with advanced infection.

There is no organized program in diagnosis and eradication of TB in poultry, swine, or wildlife. However, voluntary testing is performed, and only avian tuberculosis has been disclosed.

Contacts are maintained with Public Health agencies through which we inform them of the finding of lesioned reactor herds, and they inform us of the finding of human tuberculosis where the victim may have an animal contact. No cases of this nature were disclosed during the fiscal year 1966.

Contacts have been made at slaughtering establishments to determine whether they are meeting the standards established.

Study is currently under way to account for the difference in cattle submitted for sale and the number of samples obtained under the Market Cattle Testing program. A total of 71,164 cattle passed through accredited establishments in fiscal year 1966. Extra contacts are being made at those markets where the percentage of recovery is lowest.

TENNESSEE

During fiscal year 1966, NADL reported M. bovis isolations from cattle originating from three herds in Tennessee. Two of these were from lesion animals found on regular kill, and the third was from lesion reactors removed from a herd located as a result of milk ordinance testing. One of the lesion cattle found on regular kill bore a backtag positively identifying the herd of origin. Investigation and other identifying features corroborated the accuracy of the MCT backtag information. However, two complete herd tests have been performed on the herd of origin with negative results. Testing of adjoining herds has likewise been negative. The herd of origin will remain under close surveillance. The other lesion animal found on regular kill, from which M. bovis was isolated, is still in the process of being traced.

The infected herd found as a result of milk ordinance testing was heavily infected. Seventy-nine animals were in the herd. Of these, 51 were reactors, among which 42 had lesions of tuberculosis. The herd was depopulated, and indemnity was paid on 25 of the 28 nonreacting animals. Two of the nonreactors bore slight lesions resembling tuberculosis. This was a closed herd, and no positive source of infection has been located. This infected herd was located about three-fourths of a mile from a beef herd found to be heavily infected in 1963. However, no direct connection between the two farms could be established.

Annual retests were performed on three herds repopulated after they were depopulated because of a heavy M. bovis infection. Annual retests were also performed on five additional herds with lesion reactors in which a diagnosis other than M. bovis could not be made, even though M. bovis was not laboratory confirmed. Tuberculin tests on these 10 herds were negative.

No herds were classified in the red-flag category during fiscal year 1966.

The State has authority to pay indemnity on nonreacting animals when it is considered advisable by State officials.

M. avium was isolated by NADL from lesions found on regular kill in swine that originated from a large swine feedlot. No breeding swine were involved in this outbreak. All swine in the lot were sold at the same time. As feeder pigs, these swine originated from a multitude of sources and were impossible to trace, because of the lack of individual identification.

Working relations with Public Health agencies are good. Information regarding tuberculosis and tuberculosis eradication is freely exchanged; cooperation is excellent at all levels.

A total of 113,433 Tennessee cattle, 2 years of age and older, was identified through slaughter at accredited establishments under the Market Cattle Testing program. The tuberculosis eradication program is completely integrated into the Market Cattle Testing program. Seven counties were reaccredited under the provisions of part III, paragraph 12, of the Uniform Methods and Rules of the USDA and USLSA during fiscal year 1966.

Forty-four ADE forms 6-35 and 36 ADE forms 6-4 were investigated and completed during the period covered by this report.

TEXAS

One large range herd was depopulated. This herd had a long history of M. bovis infection. A total of 664 reactors was sent to slaughter. A total Federal indemnity of \$16,599.31 was paid, together with a like amount from the State of Texas. As of this writing, we know of no plans to restock this premise.

Periodic contacts with accredited slaughtering plants are made to determine if minimum standard requirements are being maintained. The three-part tag system is being utilized in some of the larger plants.

UTAH

To the best of our knowledge, M. bovis herds are not in existence in Utah. Therefore, we have no red-flag herds, had no depopulation of M. bovis infected herds, and paid no indemnity on such.

We have had an active campaign for the eradication of tuberculosis in poultry and swine and a small amount of work with wildlife. As previously reported, we have done a great deal of testing and eradicating of tuberculosis in the farm flocks in Rich County. We have followed up a consistent retest program of flocks whose owners have cooperated in this eradication program. We have also tested swine and other animals on the farms where avian tuberculosis has been diagnosed. Post mortem findings have been successful, and avian tuberculosis organisms have been isolated through laboratory procedures.

With respect to wildlife we captured sparrows in some areas and isolated avian organisms from one sparrow captured on the premises of a rather large commercial flock that had become infected. The question is whether the sparrow contracted the disease from the poultry or whether the poultry contracted the disease from the sparrow.

In addition, we have been working with the State Fish and Game Department in its effort to poison starlings in certain areas of the State. Unfortunately, these birds were decomposed when delivered to the laboratory, and no organisms of any significance were isolated. In agreement with the Utah Fish and Game Department, it was believed best to get birds to the laboratory before they are decomposed, and to obtain birds that had not been poisoned for fear that the poison may interfere with the possible isolation of organisms. This agreement may be continued next year.

We have very good relations with the State Public Health people. In fact, wherever a reactor animal is found we notify the State Public Health people who request that the families from whom cattle were taken be tested by their family physician to determine if any of the members react to tuberculin. We have been invited to seminars in which tuberculosis was discussed, and we feel that decided progress has been made in the past 6 months in obtaining a closer working relationship with the public health agencies. Authorities hope that Utah will be one of the first States to become tuberculosis-free for humans.

We are following the procedure outlined for standards of slaughtering plants referred to in ANH Division Memorandum 552.19, dated September 17, 1964. In addition, we have set up an inspection procedure for each veterinarian who contacts the plant supervisors and inspectors in his area or district. Plant supervisors are instructed to check with the inspector, particularly to see that glands are cut as outlined in proper meat inspection procedures, and that proper identification is made on all animals slaughtered. This inspection has the full cooperation of the State Department of Agriculture and the State veterinarian, and they are very anxious that their inspectors comply with ANH memorandum 552.19.

We are continuing to improve our MCT program and are working very closely with dealers in order that we can positively identify the animals to the original owner. There is still room for improvement in this phase of the work. However, we are getting better cooperation from the dealers than we had in the past.

We have made sufficient progress with M. bovis eradication that we have recommended the balance of the counties as tuberculosis-free areas.

VERMONT

Approximately 25 percent of all Vermont cattle were tuberculin tested during fiscal year 1966. Area testing revealed 12 NGL reactors (7 lots) and 49 suspects (22 lots).

All retests of herds quarantined because of reactor or suspects on routine area testing were performed by salaried regulatory veterinarians. Retesting revealed 12 additional NGL reactors and 26 additional suspects. Retests on suspect animals in most cases were complete herd tests.

No lesion reactors were revealed in Vermont as a result of any tuberculin tests applied during fiscal year 1966.

No reactors were located as a result of ANH form 6-4 reports of investigations.

Three ADE form 6-35 investigations were completed during fiscal year 1966. Two of these forms 6-35 originated from the slaughter of cattle with lesions, which NADL determined later to be "not tuberculosis." The third form 6-35 originated from the slaughter of an animal from an Orleans County herd, which at one time was classified as a red-flag herd. At the time this

animal was removed for slaughter, the entire herd was dispersed, and cattle are no longer on the premise. This animal was the only bovine found with lesions of tuberculosis during fiscal year 1966. Tuberculosis was not reported in any other species of animal during this period.

No red-flag herds are in Vermont.

Vermont officials do not now have authority to pay indemnity for nonreactors to depopulate a tuberculosis-infected herd.

The State-Federal Brucellosis Vaccination Program was terminated, effective June 30, 1966. It is expected that a very small percentage of calves will be vaccinated and identified by eartag at owner's expense in the future. Identification tags applied by artificial breeding technicians and DHIA technicians are generally poorly reported and, with area testing on a 4-year schedule, it is anticipated that the number of animals going to slaughter without tags will increase considerably in the next few years.

"Deviator"-type responses to tuberculin continue to be a major problem in our testing program. Increased emphasis on reporting deviators by the type of reaction has resulted in more than the usual number of suspects being reported during the past fiscal year.

A meat inspection law passed by the last legislature will require post mortem inspection of all animals slaughtered in Vermont, effective July 1, 1966. No plans have been developed to utilize records of animals slaughtered at accredited establishments for reaccrediting areas or establishing free areas.

At the present time all counties except Orleans and Addison in Vermont would qualify as tuberculosis free.

Vermont officials are presently opposed to any plan to accredit tuberculosis-free areas if it prohibits free movement of cattle between counties without a 30-day test.

VIRGINIA

We are extremely pleased to report that Virginia is free of M. bovis for the second successive year. The surveillance of our livestock population for this disease continues at what we believe to be satisfactory levels. A total of 225,409 cattle was tested on farms and, in addition, 56,462 animals were slaughtered at accredited establishments and credited to their herds of origin. We recognize that the complacency of both the veterinary profession and livestock owners represents the one factor we must guard against if we are to achieve final eradication and prevent reintroduction of this disease. Veterinarians are being encouraged to report all responses to the tuberculin test; 273 suspects were reported.

A total of 43 flocks containing 644 head of poultry was tested. Two reactor flocks were disclosed.

We also tested 74 swine herds containing 2,171 head. Two herds disclosed reactors; in both instances, animals responded to both avian and mammalian tuberculin. Runyon Type III organisms were isolated from tissues submitted from reactors in one of the herds. No isolations were made from tissues submitted from the second herd.

Our close liaison with the State Public Health Department continued through the year. Seven herds totaling 211 cattle and six herds totaling 14 swine were tested as a follow-up to reports received from the Public Health officials of human tuberculosis in rural families.

These tests disclosed three suspect cattle, which were subsequently retested and found negative.

Continued excellent cooperation was received throughout the year from Federal and State veterinary meat inspectors. ADE form 6-35 reports are being received on all cases of suspected tubercular lesions disclosed on post mortem examination.

As in the past, we are taking full advantage of laboratory support in our diagnosis procedures. Because of the extremely low incidence of reactor animals, the number of tissue lots submitted to NADL for examination was less than last year--49 lots this year compared with 94 lots the previous fiscal year. One large institutional herd that has experienced numerous nonspecific responses over the past several years was enrolled in Project 14 Field Trial Study. Most of the tissue specimens were submitted from this herd.

WASHINGTON

Few significant problems were encountered during fiscal year 1966 in our tuberculosis eradication program. During the past 5 years, only one herd has been found to be infected with M. bovis. This herd was originally found to be infected in 1961 according to an ADE Form 6-35. Eleven herd tests were made through March 1965; 48 reactors were removed on six positive tests.

In September 1965, a ruling was obtained from the Attorney General, attached to Washington State Department of Agriculture, that indemnity could be paid on nonreactors in an infected herd. The entire herd (169 animals) was slaughtered on September 17 under Federal Meat Inspection examination at Spokane. Seven animals had lesions, and specimens were submitted to NADL. Three specimens were negative on histopathological examination; one was not examined; two compatible with a diagnosis of tuberculosis; and one was suggestive of tuberculosis, although no acid-fast organisms were found. On cultural examination, one of the positive histopathological specimens revealed M. bovis. This particular animal had been negative on all previous herd tests.

In reviewing the history of this herd, it is evident that the decision to slaughter the entire herd, with indemnity, was scientifically and economically sound. It was unfortunate that a favorable ruling by the State of Washington in regard to paying indemnity on the entire herd could not have been obtained earlier.

During the year, two beef herds in eastern Washington revealed unusual responses on tests. Responses have been confined in general to yearling animals. On retests, using both mammalian and avian tuberculin, there has been marked decrease to the mammalian tuberculin with continued response to the avian. Specimens submitted to NADL have proved to be negative to date. Investigations are continuing on both herds.

Two swine herds were tested for tuberculosis as a result of purchases from an infected Idaho herd. Seven responses were found among the 75 head tested in the two herds. All responses were to avian tuberculin. Swine with responses were slaughtered and specimens submitted to NADL. A Runyon Group III organism was cultured from one animal. One additional swine herd is under investigation as the result of finding acid-fast organisms on specimens submitted by Federal Meat Inspection Division.

All accredited slaughtering establishments were visited during the year, and requirements were reviewed with Meat Inspection personnel. Efficiency in maintaining the identity of cattle from farms and ranches through slaughter continued during the year at a high level, averaging

93 percent. The losses in identification were in dealer and feedlot cattle and in cattle that had lost their backtags. Cooperation of meat inspection and brand inspection personnel has been good. Most dealers are cooperating well, and those that have not are being contacted.

Two additional counties have been submitted with recommendation that they be declared TB-free.

WEST VIRGINIA

No M. bovis herds were reported. West Virginia has no red-flag herds, and no herds were depopulated.

Animals can be condemned on reaction or physical examination. Authority to condemn exposed animals is not clear cut, but the State Livestock Disease Control Division assures us it can be done without difficulty.

Avian tuberculin is currently being used to cross-check sensitivity in swine. Some responses have been elicited to avian sensitivity, but no mammalian-only reactors have been found. Two NGL bovine reactors (mammalian) in two herds were negative at NADL. Eight avian reactors and one avian and mammalian reactor in one State swine herd were condemned. All laboratory results were negative.

Public Health officials are contacted when reactors are found. They contact the ANH officials when human cases are diagnosed.

No accredited slaughtering plants are in West Virginia. It will be at least 1 year before we have any accredited slaughtering plants unless State meat inspection gets ahead of its projected schedule.

If backtags were left on, identification would be good. Some dealers persist in removing them between markets. We do not have this problem in cattle that go to slaughter rather than to another market. Consequently, identification is very good.

WISCONSIN

Three herds infected with M. bovis were disclosed during fiscal year 1966. Two were found by routine testing. The third was discovered on traceback from cattle that disclosed lesions on regular kill.

Source was determined in only one of the following three cases: 1. Animals purchased at a purebred dispersal in 1956 were responsible for the introduction of infection. The premise was depopulated under authority CFR 51.9 (d). 2. A grade beef herd disclosed six reactors when tested for sale. Two animals revealed extensive lesions on post mortem examination. The owner shipped the remainder for slaughter. 3. The other infected herd was a bull stud. To date, 42 animals have been removed.

Tuberculosis exists in Wisconsin poultry. The prevalence is unknown. The same holds true for swine. M. avium has been isolated from 52 cattle that disclosed lesions of tuberculosis on regular kill. The fact that no poultry are on many of the farms of origin indicates that other reservoirs of infection may be involved.

Generalized mycobacteriosis was reported on a mink ranch. Both NADL and Michigan State University isolated the causative agent, which has been identified as a Runyon Group III. Although it was not definitely established, animal byproducts from a local abattoir may well have been the source of infection.

Our backtagging program is being studied extensively, and the results will be available in the near future.

WYOMING

Two NGL reactors were disclosed as a result of premise testing. No red-flag herds are in this State; Consequently, no cause to depopulate tuberculosis-infected herds.

The State has authority to pay indemnity for nonreactors when deemed necessary. Indemnity payments in Wyoming are based on the Board of Equalization's assessed value of the animals for tax purposes.

Tissue samples from two poultry flocks submitted to Wyoming State Diagnostic Laboratory by practicing veterinarians were confirmed as avian tuberculosis. The flocks were tested by district veterinarians and disclosed approximately 30 percent infection. Both flocks were sent to slaughter in establishments under State inspection, and the premises were cleaned and disinfected under supervision of district veterinarians. Three cows located on one farm were tested with negative results. The other premise maintains no other livestock.

The poultry flock on the premise where the two NGL reactors were disclosed was tested by an ANH veterinarian. Approximately 20 percent of the birds reacted to the test. Lesions were demonstrated in 80 percent of these reactors on post mortem examination (the remains were destroyed by burning). The remainder of this flock will be sent to slaughter, and the premise will be cleaned and disinfected under supervision.

No cases of tuberculosis have been reported in swine or wildlife.

We have a working agreement with the Wyoming Public Health Service in respect to communicable disease.

Our goal for accredited slaughtering establishments was attained. The veterinarian in charge of State Meat Inspection Service has agreed to a policy whereby ANH personnel will contact the managers and veterinary inspectors at accredited establishments to obtain needed information and assist in submission of tissue samples for examination. Our area and district veterinarians are now activating this program.

The number of backtags applied increased 50 percent in fiscal year 1966. Test results were received in 65 percent. Since we do have the full cooperation of the State veterinarian's office and brand inspection personnel, we believe the identity of animals in market channels can be maintained.

PUERTO RICO

During this fiscal year all dairy herds in Puerto Rico were tested for compliance with milk ordinance law. Up to this time, the law had not been enforced by the authorities. As a result, new infection was found in several dairy herds. Lesions compatible with tuberculosis were disclosed in 10 of these herds. A total of 580 reactors was slaughtered and buried. Included in this figure are 130 animals in a red-flag herd, which was depopulated.

We expect infection to be much lower during fiscal year 1967. Infection in most herds with reactors is well under control because extremely close reading is done during retests.

Actually, we have two herds that may be considered as red-flag herds. In one herd, where 35 out of 53 reactors showed gross lesions in the second retest, infection had been disclosed during the past with sporadic negative tests in between. We noticed that infection dated back to 1938, when 1 animal reacted out of 41 animals tested. Reactors were found in 1949, 1950, 1951, and 1953. In 1954 the late Dr. W. C. Logan performed a cervical test that disclosed 94 reactors, of which 65 showed gross lesions. Later on the same year, 18 more animals reacted to the cervical test. One reactor was found in April 1955, but after that, no more reactors were disclosed until 1963, at which time 5 reactors (4 NGL's) showed up.

In the other red-flag herd, infection was first found in May 1965. So far reactors in a decreasing number have been found on all retests, for a total of 116. Last retest disclosed only 1 reactor, and we feel rather optimistic about eradicating infection in this herd.

One of our drawbacks is the lack of adequate veterinary inspection of animals slaughtered at municipal abattoirs. We definitely cannot rely on that inspection for reaccreditation purposes and will depend solely on routine testing to reaccredit any municipality. The press, veterinary association, and other parties have been exerting pressure about the unsanitary conditions of most local abattoirs, and we hope that this criticism may result in some kind of action by the corresponding local authorities in a not distant future.

VIRGIN ISLANDS

The islands of St. Thomas, St. Croix, and St. John were declared to be tuberculosis-free during this year.

APPENDIX

TABLE 6.--Summary of bovine tuberculosis eradication in cooperation with the various states - fiscal year 1966

State	Tuberculin tests						Accredited herds	
	Herds tested	Cattle tested	Infected premises	Infected	Reactors found	Reactors	Herds	Cattle
	Number	Number	Number	Percent	Number	Percent	Number	Number
Alabama-----	255	17,684	0	0	0	0	32	7,090
Alaska-----	125	2,891	0	0	0	0	0	0
Arizona-----	899	38,570	10	1.1	17	.04	4	574
Arkansas-----	1,132	35,725	7	.6	12	.03	6	2,331
California-----	7,762	418,800	93	1.2	738	.18	0	0
Colorado-----	1,660	64,103	33	2.0	124	.19	27	5,647
Connecticut-----	3,553	105,634	15	.4	26	.02	6	692
Delaware-----	909	25,796	2	.2	3	.01	973	31,042
Florida-----	1,761	185,365	15	.9	52	.03	85	15,636
Georgia-----	2,507	109,547	2	.1	2	.01	145	29,822
Hawaii-----	266	21,611	10	3.8	21	.10	0	0
Idaho-----	478	13,480	0	0	0	0	3	397
Illinois-----	11,661	189,138	36	.3	58	.03	329	24,801
Indiana-----	16,753	225,985	42	.3	74	.03	503	20,371
Iowa-----	10,614	197,692	229	2.2	515	.26	62	3,661
Kansas-----	6,362	153,873	36	.6	199	.13	44	2,204
Kentucky-----	2,339	51,649	16	.7	52	.10	90	8,054
Louisiana-----	692	41,101	36	5.2	230	.56	2	683
Maine-----	2,340	57,858	0	0	0	0	116	5,553
Maryland-----	6,034	202,053	17	.3	19	.01	3,904	177,992
Massachusetts-----	4,026	115,996	7	.2	8	.01	80	8,651
Michigan-----	16,909	213,386	67	.4	136	.06	64	5,936
Minnesota-----	26,317	446,692	16	.1	25	.01	54	5,252
Mississippi-----	1,430	57,767	2	.1	2	.01	29	5,580
Missouri-----	12,073	256,845	32	.3	46	.02	87	12,555
Montana-----	692	13,940	4	.6	4	.03	3	366
Nebraska-----	5,235	85,333	14	.3	19	.02	12	1,347
Nevada-----	67	1,540	0	0	0	0	1	443
New Hampshire-----	3,162	62,820	0	0	0	0	3,581	73,987
New Jersey-----	3,103	76,818	63	2.0	87	.11	28	3,262
New Mexico-----	342	14,550	1	.3	1	.01	0	0
New York-----	17,160	445,528	106	.6	206	.05	0	0
North Carolina-----	5,352	172,511	26	.5	34	.02	861	47,985
North Dakota-----	1,120	22,003	23	2.1	97	.44	0	0
Ohio-----	16,764	251,273	91	.5	179	.07	834	53,793
Oklahoma-----	2,873	100,650	12	.4	26	.03	21	7,832
Oregon-----	3,020	52,167	17	.6	34	.07	3	825
Pennsylvania-----	30,242	758,877	195	.6	348	.05	9,019	414,189
Rhode Island-----	756	12,315	12	1.6	17	.14	11	1,010
South Carolina-----	1,205	55,633	0	0	0	0	234	23,960
South Dakota-----	1,507	24,350	1	.1	1	.01	6	953
Tennessee-----	1,699	63,452	23	1.4	90	.14	36	5,899
Texas-----	9,775	243,943	28	.3	730	.30	11	5,468
Utah-----	137	2,787	2	1.5	5	.18	0	0
Vermont-----	3,567	126,391	18	.5	26	.02	1,068	32,000
Virginia-----	5,457	225,409	6	.1	7	.01	386	30,507
Washington-----	1,022	26,198	1	.1	1	.01	3	1,132
West Virginia-----	1,002	38,279	3	.3	3	.01	187	14,799
Wisconsin-----	22,753	672,145	60	.3	149	.02	421	30,546
Wyoming-----	520	8,058	1	.2	2	.02	12	1,090
Puerto Rico-----	1,430	111,860	89	6.2	580	.52	0	0
Virgin Islands-----	5	111	0	0	0	0	0	0
Total-----	278,824	6,918,182	1,519	.5	5,005	.07	23,383	1,126,007

TABLE 7.--Summary of bovine tuberculosis eradication in cooperation with the various states -
July 1, 1917 to June 30, 1966

State	Herds tested	Cattle tested	Reactors found	Reactors
	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Percent</u>
Alabama-----	378,424	3,350,574	5,297	0.2
Alaska-----	1,950	32,927	81	.2
Arizona-----	101,778	2,074,877	11,864	.6
Arkansas-----	316,416	2,363,937	1,852	.1
California-----	904,640	28,982,248	387,658	1.3
Colorado-----	128,383	2,483,156	14,182	.6
Connecticut-----	397,616	6,612,283	90,941	1.4
Delaware-----	109,490	1,719,350	20,908	1.2
Dist. of Columbia-----	2,001	24,882	124	.5
Florida-----	157,244	5,132,846	9,560	.2
Georgia-----	325,579	3,698,544	5,741	.2
Hawaii-----	16,709	747,618	4,468	.6
Idaho-----	142,723	2,050,605	6,180	.3
Illinois-----	2,410,774	30,753,110	312,058	1.0
Indiana-----	893,441	10,388,803	46,535	.4
Iowa-----	1,788,032	33,630,284	354,487	1.1
Kansas-----	493,192	7,661,411	28,145	.4
Kentucky-----	320,831	2,810,839	9,357	.3
Louisiana-----	222,607	3,859,050	17,161	.4
Maine-----	302,371	3,107,199	10,161	.3
Maryland-----	559,611	9,411,675	77,202	.8
Massachusetts-----	554,135	7,427,999	140,619	1.9
Michigan-----	1,615,481	17,209,993	111,567	.6
Minnesota-----	1,593,276	29,814,523	173,809	.6
Mississippi-----	390,244	3,615,783	4,561	.1
Missouri-----	575,616	7,452,053	12,264	.2
Montana-----	125,114	2,688,342	9,076	.3
Nebraska-----	553,891	9,685,806	57,074	.6
Nevada-----	26,096	513,189	2,617	.5
New Hampshire-----	391,232	4,547,275	42,812	.9
New Jersey-----	496,650	8,051,778	95,000	1.2
New Mexico-----	73,455	943,728	2,228	.2
New York-----	2,592,050	46,833,617	976,427	2.1
North Carolina-----	464,570	4,188,909	5,084	.1
North Dakota-----	296,395	5,797,848	34,024	.6
Ohio-----	1,813,385	17,564,620	119,277	.7
Oklahoma-----	443,435	6,308,697	13,289	.2
Oregon-----	704,569	5,953,055	21,666	.4
Pennsylvania-----	2,084,161	25,793,251	340,463	1.3
Rhode Island-----	71,515	1,007,740	24,716	2.5
South Carolina-----	195,991	1,816,628	2,496	.1
South Dakota-----	337,360	7,984,315	57,897	.7
Tennessee-----	352,474	3,108,535	6,662	.2
Texas-----	870,470	11,111,261	17,078	.2
Utah-----	310,480	1,900,484	11,285	.6
Vermont-----	406,351	9,139,841	138,470	1.5
Virginia-----	452,594	6,700,631	21,399	.3
Washington-----	467,849	5,127,280	45,762	.9
West Virginia-----	245,057	2,184,901	7,033	.3
Wisconsin-----	1,800,768	39,089,603	227,667	.6
Wyoming-----	68,246	1,290,486	4,176	.3
Puerto Rico-----	242,466	3,275,391	10,056	.3
Virgin Islands-----	726	34,448	0	0
Miscellaneous before 1917-----	310	4,899	184	3.8
Interstate-----	518,518	4,964,204	13,029	.3
Total-----	31,108,742	464,027,331	4,163,729	0.9

TABLE 8.--Annual average indemnities, appraisals, and salvage in tuberculosis eradication work

Fiscal year	Percentage of cattle purebred	Average appraisal	Average salvage	Average state indemnity	Average federal indemnity
1919-----	44	\$131.03	\$41.38	\$42.72	\$22.35
1920-----	32	179.18	34.68	51.08	28.88
1921-----	35	150.15	22.88	54.24	27.15
1922-----	28	109.83	17.66	36.26	23.54
1923-----	25	97.62	17.96	33.17	21.15
1924-----	16	82.94	17.37	27.72	18.42
1925-----	12	76.03	20.33	22.66	17.11
1926-----	10	85.70	24.92	25.98	14.89
1927-----	9	96.96	31.34	27.55	16.66
1928-----	9	111.90	40.35	28.71	18.91
1929-----	9	125.76	46.01	33.77	21.22
1930-----	7	136.20	42.11	40.41	26.16
1931-----	8	111.32	24.96	38.62	26.34
1932-----	6	75.16	13.72	30.62	18.96
1933-----	5	58.34	11.03	24.64	14.85
1934-----	4	54.80	11.45	21.41	13.80
1935-----	4	57.55	15.19	15.87	18.70
1936-----	4	77.66	26.50	10.18	22.44
1937-----	5	86.04	28.94	12.20	22.72
1938-----	4	86.76	32.16	16.41	18.12
1939-----	5	89.01	34.49	18.96	15.98
1940-----	6	91.05	37.12	20.44	16.20
1941-----	6	96.20	40.99	20.95	16.48
1942-----	7	109.69	50.35	21.49	16.55
1943-----	8	135.19	65.03	27.50	18.75
1944-----	7	154.53	59.93	36.07	21.72
1945-----	10	161.32	59.78	40.31	22.71
1946-----	8	174.20	69.00	37.26	23.89
1947-----	8	199.46	83.55	40.81	24.19
1948-----	9	234.60	119.74	38.53	23.90
1949-----	8	285.78	139.46	37.68	24.72
1950-----	7	272.87	123.24	43.40	25.05
1951-----	9	323.70	174.64	43.59	24.92
1952-----	9	346.13	174.05	46.15	25.66
1953-----	9	309.47	117.31	49.22	26.12
1954-----	13	250.52	82.18	43.76	26.60
1955-----	11	235.10	77.63	45.24	25.28
1956-----	9	246.52	89.43	39.97	25.60
1957-----	10	255.69	94.06	38.44	25.78
1958-----	12	301.81	133.27	36.65	26.13
1959-----	10.2	352.17	167.27	32.68	26.10
1960-----	11.7	342.15	142.56	38.70	26.76
1961-----	11.9	340.28	132.90	42.02	26.66
1962-----	11.6	329.40	128.03	43.00	26.44
1963-----	12.6	319.01	128.39	42.94	26.88
1964-----	12.2	320.85	119.58	43.38	27.02
1965-----	15.6	317.99	99.14	54.66	30.19
1966-----	7.2	314.39	108.81	48.40	30.67

TABLE 9.--Statement of comparative testing, modified accredited areas, average appraisal, salvage, and state and Federal indemnity in tuberculosis eradication work

(Indemnities calculated on basis of actual payments as of June 30 of each fiscal year)

Fiscal year	Tests conducted		Reactors found	Infection rate	Modified accredited areas ¹	Yearly average per animal		
	Herds	Cattle				Appraisal	Salvage	State indemnity
	Number	Number	Number	Percent	Number			
1935----	2,378,668	25,237,532	376,623	1.5	2,428	\$57.55	\$15.19	\$15.87
1936----	1,944,624	22,918,038	165,496	.7	2,921	77.66	26.50	10.18
1937----	961,109	13,750,308	94,104	.7	3,030	86.04	28.94	12.20
1938----	1,007,586	14,108,871	89,359	.6	3,124	86.76	32.16	16.41
1939----	750,806	11,186,805	60,338	.5	3,142	89.01	34.49	18.96
1940----	819,408	12,222,318	56,343	.46	3,148	91.05	37.12	20.44
1941----	777,435	12,229,499	40,702	.3	3,151	96.50	40.99	20.95
1942----	681,504	10,983,086	28,008	.26	3,151	109.69	50.35	21.49
1943----	563,413	9,308,936	17,167	.18	3,151	135.19	65.03	27.50
1944----	524,927	8,894,466	18,338	.2	3,151	154.53	59.93	36.07
1945----	484,749	8,105,480	19,534	.24	3,151	161.32	59.78	40.31
1946----	505,296	8,454,463	19,464	.23	2 3,150	174.20	69.00	37.26
1947----	515,517	8,312,919	16,666	.2	3,150	199.46	83.55	40.81
1948----	523,924	8,294,423	15,943	.19	3,150	234.60	119.74	38.53
1949----	536,162	8,737,501	17,007	.19	3,150	285.78	139.46	37.68
1950----	539,799	9,439,811	17,733	.19	3,150	272.87	123.24	43.40
1951----	503,933	8,847,228	12,353	.14	3 3,149	323.70	174.64	43.59
1952----	488,769	9,164,265	10,351	.11	3,149	346.13	174.05	46.15
1953----	463,159	9,675,245	10,811	.11	3,149	309.47	117.31	49.22
1954----	478,975	10,234,665	10,886	.11	3,149	250.92	82.18	43.76
1955----	417,683	9,210,810	11,133	.12	3,149	235.10	77.63	45.24
1956----	418,059	9,220,244	14,363	.15	2 3,148	246.52	89.43	39.97
1957----	414,162	8,976,409	13,974	.16	4 3,150	255.69	94.06	38.44
1958----	396,587	8,833,813	15,361	.17	3,150	301.81	133.27	36.65
1959----	366,357	8,187,161	18,914	.23	2 3,148	352.17	167.27	32.68
1960----	393,334	9,439,706	14,149	.15	3,148	342.15	142.56	38.70
1961----	399,810	9,788,386	14,579	.15	3,148	340.28	132.90	42.02
1962----	379,692	9,219,298	10,940	.12	4 3,149	329.40	128.03	43.00
1963----	339,640	8,394,790	8,314	.10	3,149	319.01	128.39	42.94
1964----	345,003	8,252,855	8,225	.10	4 3,150	320.85	119.58	43.38
1965----	308,435	7,139,667	5,608	.08	4 3,152	317.99	99.14	54.66
1966----	278,824	6,918,182	5,005	.07	3,152	314.39	108.81	48.40

¹ Includes Puerto Rico and the Virgin Islands.

² Reduction is due to consolidation of counties.

³ Reduction is due to no cattle in District of Columbia.

⁴ Increase is due to addition of new counties.

TABLE 10.--Annual results of tuberculin testing of cattle

Fiscal year	Cattle	Reactors	
		Number	Percent
1917-----	20,101	645	3.2
1918-----	134,143	6,544	4.9
1919-----	329,878	13,528	4.1
1920-----	700,670	28,709	4.1
1921-----	1,366,358	53,768	3.9
1922-----	2,384,236	82,569	3.5
1923-----	3,460,849	113,844	3.3
1924-----	5,312,364	171,559	3.2
1925-----	7,000,028	214,491	3.1
1926-----	8,650,780	323,084	3.7
1927-----	9,700,176	285,361	2.9
1928-----	11,281,490	262,113	2.3
1929-----	11,683,720	206,764	1.8
1930-----	12,845,871	216,932	1.7
1931-----	13,782,273	203,778	1.5
1932-----	13,443,557	254,785	1.9
1933-----	13,073,894	255,096	2.0
1934-----	15,119,763	232,368	1.5
1935-----	25,237,532	376,623	1.5
1936-----	22,918,038	165,496	.7
1937-----	13,750,308	94,104	.7
1938-----	14,108,871	89,359	.6
1939-----	11,186,805	60,338	.5
1940-----	12,222,318	56,343	.46
1941-----	12,229,499	40,702	.3
1942-----	10,983,086	28,008	.26
1943-----	9,308,936	17,167	.18
1944-----	8,894,466	18,338	.2
1945-----	8,105,480	19,534	.24
1946-----	8,454,463	19,464	.23
1947-----	8,312,919	16,666	.2
1948-----	8,294,423	15,943	.19
1949-----	8,737,501	17,007	.19
1950-----	9,439,811	17,733	.19
1951-----	8,847,228	12,353	.14
1952-----	9,164,265	10,351	.11
1953-----	9,675,245	10,811	.11
1954-----	10,234,665	10,886	.11
1955-----	9,210,810	11,133	.12
1956-----	9,220,244	14,363	.15
1957-----	8,976,409	13,974	.156
1958-----	8,883,813	15,361	.17
1959-----	8,187,161	18,914	.23
1960-----	9,439,706	14,149	.15
1961-----	9,788,386	14,579	.15
1962-----	9,219,298	10,940	.12
1963-----	8,394,790	8,314	.10
1964-----	8,252,855	8,225	.10
1965-----	7,139,667	5,608	.08
1966-----	6,918,182	5,005	.07
Total-----	464,027,331	4,163,729	0.90

TABLE 11.--Comparative record of slaughtered reactors to the tuberculin tests

Fiscal year	Reactors slaughtered	Condemned		Passed for cooking	
		Number	Percent	Number	Percent
1923--	107,250	12,758	11.9	1,547	1.4
1927--	289,662	27,627	9.5	2,706	.9
1930--	215,524	16,286	7.6	3,242	1.5
1931--	213,829	14,331	6.7	2,571	1.2
1932--	244,973	20,858	8.6	4,026	1.6
1933--	267,142	21,837	8.2	5,979	2.2
1934--	237,102	20,772	8.8	5,684	2.4
1935--	367,368	30,893	8.4	7,378	2.0
1936--	168,273	13,380	8.3	1,968	1.2
1937--	93,468	6,887	7.4	752	.8
1938--	92,105	7,455	8.1	562	.6
1939--	63,616	3,615	5.7	310	.5
1940--	58,127	2,429	4.2	440	.8
1941--	41,426	1,533	3.7	185	.4
1942--	29,005	1,203	4.1	179	.6
1943--	17,700	770	4.4	133	.8
1944--	17,733	721	4.1	125	.7
1945--	18,945	959	5.1	112	.6
1946--	19,745	956	4.8	97	.5
1947--	16,907	783	4.6	106	.6
1948--	16,107	678	4.2	89	.6
1949--	16,779	655	3.9	157	.9
1950--	17,579	728	4.1	230	1.3
1951--	12,422	569	4.6	87	.7
1952--	10,304	525	5.1	78	.7
1953--	10,955	583	5.3	68	.6
1954--	10,975	495	4.6	74	.7
1955--	11,133	417	3.9	70	.7
1956--	9,886	303	3.1	55	.6
1957--	14,054	319	2.3	39	.3
1958--	15,194	242	1.6	28	.1
1959--	18,606	168	.9	57	.3
1960--	13,990	165	1.2	29	.2
1961--	14,662	273	1.9	43	.3
1962--	10,747	371	3.5	52	.5
1963--	8,275	200	2.4	67	.8
1964--	8,109	211	2.6	42	.5
1965--	5,983	251	4.2	64	1.1
1966--	5,200	258	5.0	61	1.2

TABLE 12.--Results of tracing slaughtered cattle showing lesions of tuberculosis--nonreactors: July 1, 1965 to June 30, 1966

(Data from form ADE 6-35)

State	Completed Form ADE 6-35 field officera	Animals reported with lesion on Form ADE 6-35	Reported lesions not suggested for TB on lab. exam.	Cases traced to dispersed herds	Cases unable to trace	Cases traced to herd of origin	Herds of origin tested	Asso- ciated herds tested	Herds tested clean	Herds with reactors	Reactors disclosed	Lesions					Cattle tested
												Extensive	Well- marked	Slight	NCL	Skin	
	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number						Number
Alabama-----	1	1	--	--	--	--	--	2	2	--	--	--	--	--	--	--	185
Alaska-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arizona-----	2	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arkansas-----	4	4	--	--	--	1	3	8	10	1	5	2	--	3	--	1	242
California-----	15	16	--	1	1	5	5	4	4	1	249	7	32	75	134	--	1,177
Colorado-----	8	9	--	1	1	1	1	1	2	--	--	--	--	--	--	--	225
Connecticut-----	1	1	--	--	--	1	1	--	1	--	--	--	--	--	--	--	45
Delaware-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Florida-----	2	2	--	--	1	--	--	--	2	--	--	--	--	--	--	--	--
Georgia-----	3	3	--	1	2	2	2	--	2	--	--	--	--	--	--	--	193
Hawaii-----	4	4	--	--	3	3	1	--	--	1	3	--	--	--	3	--	403
Idaho-----	7	7	--	2	2	2	1	1	2	--	--	--	--	--	--	--	105
Illinois-----	30	30	--	1	8	10	10	57	61	6	11	--	--	--	11	--	1,415
Indiana-----	21	24	--	9	9	5	3	11	12	2	4	--	--	--	4	--	321
Iowa-----	26	27	--	8	8	7	7	10	5	5	87	1	15	43	28	--	271
Kansas-----	7	7	--	--	1	4	3	21	23	1	90	35	37	18	--	--	1,108
Kentucky-----	33	33	--	9	9	13	12	32	44	3	14	2	1	3	8	--	1,355
Louisiana-----	7	7	--	--	6	6	6	25	20	11	112	9	12	45	46	--	3,460*
Maine-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Maryland-----	2	2	--	--	1	1	1	--	1	--	--	--	--	--	--	--	65
Massachusetts-----	5	5	--	--	--	5	5	--	4	1	1	--	--	1	--	--	419
Michigan-----	7	7	--	3	3	3	3	2	4	1	2	--	--	2	--	--	269
Minnesota-----	16	16	--	3	3	4	2	37	36	3	9	2	1	3	3	--	657
Mississippi-----	7	7	--	2	2	4	4	20	24	--	--	--	--	--	--	--	1,340
Missouri-----	17	18	--	7	7	5	5	27	31	1	6	3	1	2	--	--	1,394
Montana-----	11	11	--	1	1	7	6	--	6	--	--	--	--	--	--	--	516
Nebraska-----	4	4	--	--	--	2	2	7	9	--	--	--	--	--	--	--	604
Nevada-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
New Hampshire-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
New Jersey-----	1	1	--	--	--	1	1	--	--	1	2	--	--	2	--	--	72
New Mexico-----	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
New York-----	14	14	--	10	--	10	10	6	14	2	9	--	--	2	3	4	682
North Carolina-----	3	3	--	1	--	1	1	--	1	--	--	--	--	--	--	--	241
North Dakota-----	17	17	--	1	4	10	6	47	48	5	30	2	9	5	14	--	1,701
Ohio-----	24	24	--	2	2	13	11	3	10	4	22	4	5	8	5	--	515
Oklahoma-----	5	5	--	3	1	3	3	1	3	1	6	1	1	1	3	--	107
Oregon-----	2	2	--	--	--	2	1	--	1	--	--	--	--	--	2	1	202
Pennsylvania-----	22	22	--	1	--	17	16	5	17	4	11	--	2	1	6	--	977
Rhode Island-----	4	4	--	2	--	2	2	--	2	--	--	--	--	--	--	--	154
South Carolina-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
South Dakota-----	5	5	--	1	--	3	3	12	15	--	--	--	--	--	--	--	--
Tennessee-----	31	31	--	18	10	7	6	37	43	2	4	--	--	1	3	--	1,316
Texas-----	12	12	--	6	4	3	3	3	6	2	8	3	1	2	2	--	1,578
Utah-----	5	5	--	3	3	1	--	--	--	--	--	--	--	--	--	--	704
Vermont-----	2	2	--	1	--	1	1	1	2	--	--	--	--	--	--	--	42
Virginia-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington-----	7	7	--	3	2	3	1	--	--	1	1	--	--	1	--	--	458
West Virginia-----	1	1	--	--	--	2	2	--	2	--	--	--	--	--	--	--	33
Wisconsin-----	26	26	--	1	--	14	8	31	37	2	47	6	3	10	28	--	1,623
Wyoming-----	2	2	--	--	--	1	--	--	1	--	--	--	--	--	--	--	110
Puerto Rico-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total-----	4,424	4,424	13	194	83	559	400	498	61	733	120	206	323	2	5	--	26,284

* 2 cases to 1 herd of origin.

1 case each of lesions in the body glands.

3 cases to 1 herd of origin.

4 cases to 1 herd of origin.

Form ADE 6-35 received but not included are:

reporters from non-Federal plants in the states of:

Calif., 3; Colo., 2; Fla., 2; Ga., 2; Hawaii, 1; Idaho, 1; Ill., 8; Ind., 2; Ky., 1; La., 1; Mich., 1; Mo., 1; N. J., 1; N. Y., 6; N. C., 1; Ohio, 4; Pa., 1; Tenn., 1; and Wash., 4.

TABLE 13.--Number of animals classified as tuberculin suspects--by states for fiscal year 1966, and totals by fiscal years 1959-65

State (1966) and fiscal years	Lots and cattle tested showing suspects but no reactors			Lots containing reactors	Total suspects
	Lots	Cattle	Suspects	Suspects	
Alabama-----	--	--	--	--	--
Alaska-----	--	--	--	--	--
Arizona-----	18	5,675	182	--	182
Arkansas-----	4	222	5	--	5
California-----	879	157,925	2,852	141	2,993
Colorado-----	23	2,494	97	75	172
Connecticut-----	55	2,959	111	6	117
Delaware-----	1	33	1	1	2
Florida-----	38	15,478	96	--	96
Georgia-----	11	513	20	--	20
Hawaii-----	3	497	8	2	10
Idaho-----	8	432	13	--	13
Illinois-----	92	2,487	167	4	171
Indiana-----	170	5,595	232	46	278
Iowa-----	219	5,748	462	--	462
Kansas-----	63	2,244	118	13	131
Kentucky-----	42	2,084	69	2	71
Louisiana-----	15	971	16	--	16
Maine-----	7	344	11	--	11
Maryland-----	127	6,865	352	3	355
Massachusetts-----	23	1,382	32	1	33
Michigan-----	1,145	31,575	2,400	68	2,468
Minnesota-----	449	11,455	666	2	668
Mississippi-----	18	1,353	29	--	29
Missouri-----	113	3,057	170	10	180
Montana-----	6	306	10	--	10
Nebraska-----	151	3,493	247	1	248
Nevada-----	1	58	3	--	3
New Hampshire-----	5	221	8	--	8
New Jersey-----	81	4,201	114	37	151
New Mexico-----	5	869	12	--	12
New York-----	484	21,768	926	6	932
North Carolina-----	79	5,495	120	2	122
North Dakota-----	112	3,051	203	21	224
Ohio-----	405	13,268	621	26	647
Oklahoma-----	57	2,633	112	--	112
Oregon-----	65	2,893	110	16	126
Pennsylvania-----	226	9,854	353	83	436
Rhode Island-----	2	54	3	--	3
South Carolina-----	13	1,241	22	--	22
South Dakota-----	41	1,286	65	--	65
Tennessee-----	43	2,130	81	31	112
Texas-----	25	2,087	64	--	64
Utah-----	32	1,009	171	15	171
Vermont-----	31	2,071	59	3	74
Virginia-----	123	8,035	270	--	273
Washington-----	12	1,103	82	--	82
West Virginia-----	24	946	49	7	56
Wisconsin-----	563	19,035	857	3	860
Wyoming-----	--	--	--	--	--
Puerto Rico-----	253	22,353	621	148	769
Virgin Islands-----	--	--	--	--	--
Total, fiscal year 1966-----	6,362	390,848	13,292	773	14,065
1959-----	3,298	119,579	5,094	1,880	6,974
1960-----	3,845	164,592	6,267	1,496	7,763
1961-----	5,447	322,708	10,123	3,477	13,600
1962-----	7,279	383,943	15,426	4,924	20,350
1963-----	7,858	408,679	15,655	3,114	18,769
1964-----	8,227	391,998	15,914	3,420	19,334
1965-----	6,905	332,034	13,574	1,740	15,314

TABLE 14.--Modified accredited tuberculosis areas by states¹
(Listed according to order of accreditation)

State	Total counties in state	Date on which last county in state accredited
	<u>Number</u>	
1. North Carolina-----	100	October 1, 1928
2. Maine-----	16	May 1, 1929
3. Michigan-----	83	August 1, 1930
4. Indiana-----	92	July 1, 1931
5. Wisconsin-----	72	January 2, 1932
6. Ohio-----	88	January 2, 1932
7. North Dakota-----	53	July 1, 1932
8. Idaho-----	44	July 1, 1932
9. Nevada-----	17	March 1, 1933
10. New Hampshire-----	10	July 1, 1933
11. Utah-----	29	July 1, 1933
12. Kentucky-----	120	November 1, 1933
13. West Virginia-----	55	December 1, 1933
14. Washington-----	39	May 1, 1934
15. Illinois-----	102	September 1, 1934
16. Virginia-----	98	November 1, 1934
17. Oregon-----	36	November 1, 1934
18. Minnesota-----	87	December 1, 1934
19. Kansas-----	105	May 1, 1935
20. Florida-----	67	July 1, 1935
21. Missouri-----	114	July 1, 1935
22. Arkansas-----	75	July 1, 1935
23. New Mexico-----	32	August 1, 1935-Sept. 1956
24. Colorado-----	63	August 1, 1935
25. Wyoming-----	23	September 1, 1935
26. Tennessee-----	95	October 1, 1935
27. South Carolina-----	46	November 1, 1935
28. Massachusetts-----	14	November 1, 1935
29. Louisiana-----	64	November 1, 1935
30. Georgia-----	159	November 1, 1935
31. Alabama-----	67	November 1, 1935
32. Iowa-----	99	December 1, 1935
33. Montana-----	56	December 1, 1935
34. Oklahoma-----	77	January 2, 1936
35. Delaware-----	3	January 2, 1936
36. Arizona-----	14	January 2, 1936
37. Mississippi-----	82	January 2, 1936
38. Texas-----	254	March 2, 1936
39. Connecticut-----	8	April 1, 1936
40. Nebraska-----	93	June 1, 1936
41. Rhode Island-----	5	September 1, 1936
42. Vermont-----	14	November 1, 1936
43. Pennsylvania-----	67	December 1, 1936
44. Maryland-----	23	July 1, 1937
45. New Jersey-----	21	September 1, 1937
46. New York-----	62	October 1, 1937
47. South Dakota-----	67	July 1, 1938
48. Virgin Islands-----	3	December 1, 1938
49. Puerto Rico-----	77	January 3, 1939
50. California-----	58	November 1, 1940
51. Alaska-----	1	July 1, 1956
52. Hawaii-----	3	August 1, 1963

¹ Signified less than 0.5 percent of tuberculosis as shown by test.

TABLE 15.--Number of tuberculosis accredited herds and cattle in such herds

End of fiscal year	Herds	Cattle
1918-----	204	6,945
1919-----	782	19,021
1920-----	3,370	82,986
1921-----	8,201	193,620
1922-----	16,216	363,902
1923-----	28,526	615,156
1924-----	48,273	920,370
1925-----	72,383	1,275,063
1926-----	96,392	1,577,087
1927-----	130,476	1,885,072
1928-----	169,356	2,265,938
1929-----	170,995	2,280,043
1930-----	182,858	2,646,686
1931-----	156,599	2,619,261
1932-----	174,648	2,863,434
1933-----	194,349	3,172,575
1934-----	225,809	3,396,553
1935-----	238,937	3,514,242
1936-----	256,056	3,746,955
1937-----	275,744	3,912,652
1938-----	269,095	3,807,142
1939-----	262,972	3,829,941
1940-----	284,757	3,743,951
1941-----	263,405	3,925,112
1942-----	259,775	3,913,405
1943-----	246,611	3,837,412
1944-----	243,551	3,828,856
1945-----	237,991	3,751,942
1946-----	232,790	3,842,132
1947-----	233,552	3,890,054
1948-----	229,807	3,805,156
1949-----	206,421	3,633,183
1950-----	195,643	3,508,800
1951-----	189,943	3,391,205
1952-----	187,266	3,423,917
1953-----	186,245	3,485,445
1954-----	185,149	3,508,077
1955-----	140,936	3,356,762
1956-----	134,996	3,324,955
1957-----	130,696	3,363,799
1958-----	57,890	1,551,856
1959-----	52,946	1,444,187
1960-----	42,287	1,263,768
1961-----	36,049	1,159,754
1962-----	36,306	1,172,210
1963-----	37,099	1,229,473
1964-----	29,660	1,287,888
1965-----	29,577	1,311,272
1966-----	23,383	1,126,007

TABLE 16.--Losses of cattle, excepting reactors, attributed to retentions for tuberculosis, not including parts of carcasses

(Data from Federal Meat Inspection records)

Fiscal year	Cattle slaughtered minus reactors	Carcasses retained minus reactors		Carcasses condemned and passed for cooking minus reactors and proportion of slaughter	
	Number	Number	Percent	Number	Percent
1916-----	7,387,051	173,754	2.35	39,218	.53
1917-----	9,276,049	195,488	2.11	49,214	.53
1918-----	10,912,417	196,917	1.8	46,335	.42
1919-----	11,212,543	176,250	1.57	42,729	.38
1920-----	9,666,188	157,016	1.62	39,305	.41
1921-----	8,137,982	132,068	1.62	33,312	.41
1922-----	7,795,323	146,945	1.87	34,712	.45
1923-----	8,934,975	156,738	1.75	41,113	.46
1924-----	9,049,342	141,595	1.56	39,333	.43
1925-----	9,595,969	145,012	1.51	40,374	.42
1926-----	9,817,599	138,506	1.41	41,125	.42
1927-----	9,810,797	112,924	1.15	31,755	.32
1928-----	8,837,882	91,856	1.04	25,664	.29
1929-----	8,120,992	81,276	1.0	21,265	.26
1930-----	8,119,760	61,192	.75	15,487	.19
1931-----	8,061,749	50,725	.63	12,430	.15
1932-----	7,793,878	38,446	.5	9,307	.12
1933-----	7,554,258	31,971	.42	7,993	.11
1934-----	9,476,141	34,509	.36	9,329	.10
1935-----	12,563,474	30,569	.24	8,273	.07
1936-----	10,215,227	19,076	.19	4,856	.05
1937-----	10,853,778	15,815	.15	4,003	.04
1938-----	9,934,984	11,663	.12	2,828	.03
1939-----	9,515,754	10,090	.11	2,395	.03
1940-----	9,530,642	8,384	.09	1,998	.02
1941-----	10,102,594	8,029	.07	1,868	.02
1942-----	11,743,465	7,255	.06	1,865	.015
1943-----	11,559,167	5,630	.04	1,440	.012
1944-----	12,900,844	5,778	.04	1,628	.012
1945-----	14,504,806	5,830	.04	1,539	.01
1946-----	12,564,738	4,499	.035	1,194	.009
1947-----	14,080,279	4,017	.028	1,051	.007
1948-----	14,235,111	3,968	.028	1,116	.008
1949-----	13,168,967	3,712	.028	996	.008
1950-----	13,100,662	4,125	.031	796	.006
1951-----	12,570,825	2,674	.021	518	.004
1952-----	12,132,333	3,133	.026	463	.004
1953-----	15,204,998	1,406	.009	447	.003
1954-----	18,474,637	1,299	.007	441	.002
1955-----	18,725,455	941	.005	293	.0015
1956-----	19,670,012	617	.003	178	.0009
1957-----	20,133,683	824	.004	212	.00105
1958-----	18,570,794	567	.003	114	.0006
1959-----	17,310,870	447	.00217	91	.000525
1960-----	18,453,894	425	.00230	88	.00076
1961-----	19,861,262	382	.00192	87	.00038
1962-----	20,152,309	411	.00204	79	.000392
1963-----	20,854,588	365	.00175	74	.000355
1964-----	23,200,897	457	.00196	76	.000327
1965-----	25,800,154	489	.00190	73	.000283
1966-----	27,373,829	476	.0017	76	.000278

TABLE 17.--Avian tuberculosis surveys

Fiscal year	Flocks			Fowls observed (approximate)
	Observed	Infected with tuberculosis		
	<u>Number</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>
1925 ¹ -----	75,799	4,690	6.2	5,107,629
1926-----	157,950	9,751	6.2	14,012,923
1927-----	211,675	11,991	5.7	16,502,841
1928-----	226,104	15,787	7.0	20,411,067
1929-----	165,239	10,659	6.4	16,763,703
1930-----	177,156	11,779	6.6	18,931,451
1931-----	186,966	9,347	5.0	21,174,707
1932-----	196,670	7,287	3.7	19,576,397
1933-----	168,286	5,999	3.6	15,741,474
1934-----	149,915	3,468	2.3	13,951,019
1935-----	345,382	7,508	2.2	25,749,046
1936-----	237,449	5,982	2.5	17,313,246
1937-----	128,351	2,851	2.2	15,813,814
1938-----	127,912	5,985	4.7	14,838,911
1939-----	97,836	3,315	3.4	10,129,603
1940-----	126,604	4,983	3.9	14,943,632
1941-----	125,813	5,627	4.5	16,217,662
1942-----	86,855	4,513	5.2	11,737,996
1943-----	52,044	1,552	3.0	7,558,656
1944-----	62,012	1,242	2.0	9,872,895
1945-----	35,874	1,063	2.0	5,084,223
1946-----	51,174	1,509	2.9	8,063,715
1947-----	41,296	882	2.1	5,426,589
1948-----	33,176	786	2.4	4,582,478
1949-----	35,107	771	2.2	4,920,214
1950-----	30,271	261	.9	4,729,966
1951-----	19,452	354	1.8	2,798,851
1952-----	36,670	470	1.3	3,315,618
1953-----	14,240	228	1.6	2,530,529
1954-----	7,902	65	.8	1,382,987
1955-----	2,478	30	1.2	400,497
1956-----	8,784	49	.6	1,559,298
1957-----	2,519	16	.6	426,859
1958-----	1,869	34	1.8	342,773
1959-----	457	19	4.2	146,971
1960-----	558	29	5.2	129,840
1961-----	415	5	1.2	98,001
1962-----	1,329	8	.6	371,019
1963-----	203	18	8.9	40,449
1964-----	40	13	32.5	4,936
1965-----	668	52	7.8	92,149
1966-----	585	55	9.4	60,952
Total-----	3,431,085	141,033	4.1	352,857,586

¹February to June.

TABLE 18.--Summary of avian tuberculosis eradication work in cooperation with states, July 1965 June 1966:
Results of observation of poultry by veterinarians engaged in cattle tuberculin testing work¹

State	Observed		Apparently free				Tuberculosis flocks			
	Flocks	Fowls	Flocks	Fowls	Autopsied		Flocks	Fowls	Fowls autopsied	Fowls T.B.
					Flocks	Fowls				
	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
Indiana-----	2	24	1	17	--	--	1	7	7	5
Maryland-----	2	300	--	--	--	--	2	300	5	5
Nebraska-----	567	59,028	483	46,852	34	41	84	12,176	108	107
Ohio-----	3	30	2	20	--	--	1	10	2	2
Oregon-----	1	50	--	--	--	--	1	50	5	5
Tennessee-----	2	4	2	4	2	4	--	--	--	--
Wisconsin-----	4	1,100	--	--	--	--	4	1,100	11	11
Wyoming-----	4	416	1	55	--	--	3	361	46	42
Total-----	585	60,952	489	46,948	36	45	96	14,004	184	177

¹ No testing reported in States not listed.

TABLE 19.--Summary of avian tuberculosis eradication work in cooperation with states

Fiscal year	Tested		Negative		Infected flocks			
	Flocks	Fowls	Flocks	Fowls	Flocks	Fowls	Fowls tested	Reactors
	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>
1956-----	78	3,744	46	2,333	32	1,411	1,411	175
1957-----	26	1,768	17	1,371	9	777	397	52
1958-----	26	1,661	17	1,118	9	543	543	68
1959-----	67	5,113	41	3,013	26	23,777	2,100	492
1960-----	109	6,028	64	3,583	45	5,450	2,445	386
1961-----	102	5,606	76	4,306	25	4,945	1,848	555
1962-----	77	4,340	64	3,262	14	1,090	919	259
1963-----	42	2,757	23	1,489	19	1,694	1,268	339
1964-----	70	2,799	42	1,211	28	2,093	1,588	333
1965-----	32	2,952	21	1,621	11	2,535	1,331	130
1966-----	154	5,368	99	1,932	55	3,436	3,436	383

TABLE 20.--Summary of avian tuberculosis eradication work in cooperation with states - July 1965 to June 1966: Results of tuberculin tests applied to poultry¹

State	Tested		Negative		Flocks with reactors				Reactors autopsied		
	Flocks	Fowls	Flocks	Fowls	Flocks	Fowls	Fowls tested	Reactors	Flocks	Fowls	Fowl T.B.
	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>
Alabama---	1	19	1	19	--	--	--	--	--	--	--
Colorado--	3	155	2	111	1	44	44	4	1	44	--
Illinois--	1	14	--	--	1	14	14	3	--	--	--
Indiana---	4	73	4	73	--	--	--	--	--	--	--
Iowa-----	1	5	1	5	--	--	--	--	--	--	--
Kansas----	2	39	1	30	1	9	9	1	1	9	1
Maryland--	1	12	1	12	--	--	--	--	--	--	--
Montana---	1	62	--	--	1	62	62	25	--	--	--
Ohio-----	3	30	2	20	1	10	10	2	1	10	2
Utah-----	89	3,824	44	938	45	2,886	2,886	249	5	198	9
Virginia--	43	644	41	594	2	50	50	9	2	50	3
Washington	1	75	1	75	--	--	--	--	--	--	--
Wyoming---	4	416	1	55	3	361	361	90	3	361	37
Total	154	5,368	99	1,932	55	3,436	3,436	383	13	672	52

¹ No testing reported in States not listed.

TABLE 21.--Losses of swine attributed to retentions for tuberculosis

(Data from Federal Meat Inspection records)

Fiscal year	Swine slaughtered	Carcasses retained		Carcasses passed for cooking and proportion of slaughter		Carcasses condemned and proportion of slaughter	
	Number	Number	Percent	Number	Percent	Number	Percent
1921-----	37,702,866	4,693,305	12.4	96,234	0.26	64,830	0.17
1922-----	39,416,439	4,640,081	14.3	95,809	.24	70,304	.18
1923-----	48,600,069	7,139,925	14.7	113,802	.23	88,688	.18
1924-----	54,416,481	8,293,965	15.2	125,000	.23	100,110	.18
1925-----	48,459,608	7,039,724	14.5	106,328	.22	86,282	.18
1926-----	40,442,730	5,667,093	14.0	81,646	.2	63,748	.16
1927-----	42,650,443	5,778,009	13.5	73,232	.17	59,656	.14
1928-----	48,347,393	5,872,503	12.1	69,756	.14	55,749	.12
1929-----	47,163,573	5,408,910	11.5	58,030	.13	46,624	.1
1930-----	46,688,860	5,321,352	11.4	53,783	.12	42,381	.09
1931-----	44,020,633	5,174,343	11.8	49,549	.11	38,805	.09
1932-----	45,852,422	5,222,420	11.4	45,651	.1	37,509	.08
1933-----	45,698,053	4,820,152	10.5	40,769	.09	35,680	.08
1934-----	45,773,196	5,102,636	11.1	37,686	.08	40,038	.09
1935-----	34,413,317	3,714,828	10.8	36,554	.08	26,133	.08
1936-----	28,506,019	2,925,593	10.3	16,389	.06	15,195	.05
1937-----	36,226,309	3,435,433	9.5	17,666	.05	15,854	.04
1938-----	32,543,905	2,964,201	9.1	13,665	.04	12,423	.04
1939-----	38,656,537	3,418,805	8.8	15,160	.04	13,190	.03
1940-----	46,673,925	4,076,996	8.7	18,148	.04	16,015	.03
1941-----	48,710,059	4,014,021	8.2	15,907	.03	15,317	.03
1942-----	50,133,871	3,991,333	8.0	14,413	.03	13,357	.03
1943-----	56,867,080	4,056,918	7.1	13,660	.02	13,051	.02
1944-----	74,946,117	5,185,294	6.9	15,744	.02	15,910	.02
1945-----	49,468,458	3,556,582	7.2	10,396	.02	12,445	.02
1946-----	42,664,755	3,264,985	7.65	8,725	.02	10,514	.02
1947-----	45,073,370	3,843,732	8.5	8,756	.02	10,756	.02
1948-----	48,550,688	2,987,070	6.1	8,596	.018	9,804	.02
1949-----	49,062,656	2,735,094	5.6	7,490	.015	8,654	.018
1950-----	55,764,636	2,913,254	5.2	9,486	.017	11,296	.02
1951-----	59,601,593	2,837,120	4.7	9,778	.016	11,378	.019
1952-----	63,965,422	2,827,998	4.4	7,670	.011	10,368	.016
1953-----	57,391,886	2,471,947	4.3	7,632	.013	9,936	.017
1954-----	50,295,636	1,955,686	3.9	6,397	.013	7,875	.016
1955-----	57,055,438	1,892,013	3.3	5,016	.009	7,311	.013
1956-----	66,779,920	2,056,566	3.1	4,589	.007	7,774	.012
1957-----	62,238,519	1,841,623	2.9	3,482	.0057	7,146	.011
1958-----	59,202,889	1,640,128	2.8	3,807	.0064	5,847	.010
1959-----	63,870,479	1,785,902	2.78	3,368	.00527	5,895	.0092
1960-----	70,494,437	1,706,136	2.42	1,861	.00263	5,983	.00848
1961-----	64,210,887	1,587,938	2.47	1,891	.00294	6,147	.0095
1962-----	67,109,539	1,513,126	2.25	1,789	.00266	5,503	.0082
1963-----	69,313,052	1,483,450	2.14	1,462	.00211	5,387	.0078
1964-----	72,154,838	1,457,993	2.02	1,459	.00202	5,527	.0077
1965-----	68,538,816	1,210,942	1.91	793	.00116	4,999	.0071
1966-----	60,662,314	1,000,431	1.65	321	.00053	3,763	.0062

TABLE 22.--Swine tuberculosis testing

Fiscal year	Tested		Negative		Reactors		Avian		Mammalian		Avian and mammalian tuberculin					
	Herds	Swine	Herds	Swine	Herds	Reactors	Herds	Reactors	Herds	Reactors	Herds	Reactors	Animals reacting to avian	Animals reacting to mammalian	Animals reacting to avian and mammalian	
	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
1958-----	126	3,135	91	1,769	--	--	--	--	--	--	--	--	--	--	--	--
1959-----	203	4,419	179	3,776	--	--	--	--	--	--	--	--	--	--	--	--
1960-----	229	6,320	188	5,029	--	--	--	--	--	--	--	--	--	--	--	--
1961-----	232	9,599	180	6,557	--	--	--	--	--	--	--	--	--	--	--	--
1962-----	192	5,513	156	3,785	33	285	26	108	9	26	2	131	6	10	10	10
1963-----	249	6,522	202	4,105	47	406	35	206	4	7	8	181	0	12	12	12
1964-----	318	9,834	229	4,705	89	964	75	813	4	34	10	96	2	19	19	19
1965-----	233	7,823	194	5,521	39	449	20	175	6	13	13	138	12	11	11	11
1966-----	213	4,854	184	3,965	29	205	11	48	11	111	7	32	0	14	14	14

TABLE 23.--Summary of swine tuberculosis eradication in cooperation with states-July 1965 to June 1966; results of tuberculin tests applied to swine

State ¹	Tested		Negative		Reactors		Avian		Mammalian		Avian and mammalian tuberculin				
	Herds	Swine	Herds	Swine	Herds	Reactors	Herds	Reactors	Herds	Reactors	Herds	Animals reacting to avian	Animals reacting to mammalian	Animals reacting to avian and mammalian	
Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	
Alabama-----	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Arizona-----	1	117	1	117	0	0	0	0	0	0	0	0	0	0	0
Florida-----	19	500	18	499	1	1	0	0	1	1	0	0	0	0	0
Idaho-----	6	228	3	24	3	79	0	0	3	79	0	0	0	0	0
Illinois-----	17	145	14	107	3	8	2	5	1	3	0	0	0	0	0
Indiana-----	7	88	6	54	1	20	0	0	0	0	1	14	0	6	6
Iowa-----	13	207	7	95	6	37	2	7	2	20	2	7	0	3	3
Kansas-----	4	71	3	58	1	2	1	2	0	0	1	0	0	1	1
Maryland-----	5	25	1	9	4	4	2	2	1	1	0	0	0	0	0
Minnesota-----	1	2	1	2	0	0	0	0	0	0	0	0	0	0	0
North Carolina-----	3	213	0	0	3	17	3	17	0	0	0	0	0	0	0
Ohio-----	10	305	9	267	1	15	1	15	0	0	0	0	0	0	0
Rhode Island-----	5	110	3	75	2	5	0	0	2	5	0	0	0	0	0
South Dakota-----	1	13	1	13	0	0	0	0	0	0	0	0	0	0	0
Tennessee-----	2	8	2	8	0	0	0	0	0	0	0	0	0	0	0
Texas-----	35	396	35	396	0	0	0	0	0	0	0	0	0	0	0
Utah-----	3	82	2	41	1	1	0	0	0	0	1	1	0	0	0
Virginia-----	74	2,171	72	2,142	2	7	0	0	1	2	1	2	0	3	3
Washington-----	3	7	3	7	0	0	0	0	0	0	0	0	0	0	0
West Virginia-----	2	148	1	33	1	9	0	0	0	0	1	8	0	1	1
Wisconsin-----	1	17	1	17	0	0	0	0	0	0	0	0	0	0	0
Total-----	213	4,854	184	3,965	29	205	11	48	11	111	7	32	0	14	14

¹ No testing reported in states not listed.

TABLE 24.--Summary of paratuberculosis (Johne's disease)

Fiscal year	Herds	Cattle tested	Infected premises	Reactors found
	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>
1957-----	217	11,183	85	547
1958-----	213	8,406	85	395
1959-----	208	7,817	89	344
1960-----	485	12,647	89	518
1961-----	443	10,829	78	204
1962-----	430	13,360	66	261
1963-----	680	13,357	60	179
1964-----	527	10,051	39	171
1965-----	496	11,276	38	171
1966-----	485	8,528	38	260

TABLE 25.--Summary of paratuberculosis (Johne's disease) - fiscal year 1966

State	Herds	Cattle tested	Infected premises	Reactors found
	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>
Alabama-----	--	--	--	--
Alaska-----	--	--	--	--
Arizona-----	--	--	--	--
Arkansas-----	--	--	--	--
California-----	4	195	1	6
Colorado-----	--	--	--	--
Connecticut-----	--	--	--	--
Delaware-----	--	--	--	--
Florida-----	12	265	--	--
Georgia-----	--	--	--	--
Hawaii-----	1	1	--	--
Idaho-----	1	66	1	5
Illinois-----	32	154	1	1
Indiana-----	31	566	14	116
Iowa-----	10	160	1	1
Kansas-----	2	32	--	--
Kentucky-----	1	42	1	8
Louisiana-----	2	3	--	--
Maine-----	--	--	--	--
Maryland-----	--	--	--	--
Massachusetts-----	--	--	--	--
Michigan-----	--	--	--	--
Minnesota-----	15	665	1	5
Mississippi-----	1	53	--	--
Missouri-----	--	--	--	--
Montana-----	--	--	--	--
Nebraska-----	1	34	1	34
Nevada-----	--	--	--	--
New Hampshire-----	--	--	--	--
New Jersey-----	--	--	--	--
New Mexico-----	--	--	--	--
New York-----	--	--	--	--
North Carolina-----	--	--	--	--
North Dakota-----	--	--	--	--
Ohio-----	23	1,490	9	36
Oklahoma-----	1	243	1	1
Oregon-----	1	1	1	1
Pennsylvania-----	64	999	3	7
Rhode Island-----	--	--	--	--
South Carolina-----	--	--	--	--
South Dakota-----	1	16	--	--
Tennessee-----	1	45	--	--
Texas-----	144	1,329	--	--
Utah-----	1	35	--	--
Vermont-----	--	--	--	--
Virginia-----	--	--	--	--
Washington-----	12	798	3	39
West Virginia-----	--	--	--	--
Wisconsin-----	124	1,336	--	--
Wyoming-----	--	--	--	--
Puerto Rico-----	--	--	--	--
Virgin Islands-----	--	--	--	--
Total-----	435	8,528	38	260

U. S. DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Federal Center Building
Hyattsville, Maryland 20782

Postage and Fees Paid
U. S. Department of Agriculture

Official Business